COMPUTERWORLD

High tech drives automaker's pitch

By Julia King

Forget Ricardo Montalban and the fine Corinthian leather interiors. Chrysler Corp. is test-driving a new way to sell cars as it races to leap its technology-savvy competitors.

Under siege from on-line car brokers, warehouse clubs and giant auto malls, Chrysler is banishing high-pressure salespeople and nitty-gritty haggling over prices.

The carmaker's bid for survival is its new system, called Modus, which is being piloted now. It provides car shoppers with touch-screen kiosks to help them find information about new cars and the fixed price tags they carry.

Consumers who want to comparison shop can tap in to automotive

Chrysler customers will use touch-screen kiosks to check car prices and comparison shop on the Web.

sites on the World Wide Web from Modus kiosks that are equipped with a browser.

"This is a huge cultural and behavioral change," said Bonita Coleman-Webb, Chrysler's manager of consumer marketing and a Modus

Priced for the 'net

Oracle tweaks license fees to accommodate Internet cruisers

By Dan Richman

Oracle Corp. on Wednesday will announce a per-processor pricing scheme for customers who want to give Internet users access to data.

The prices will complement Oracle's traditional per-user fees. The scheme is expected to be useful to customers who can't accurately or predictably count their end users — as is the case at most sites open to multitudes of Internet cruisers.

Oracle will charge $5,500 per processor for its Workgroup Server edition of Oracle7 and $63,840 for its Enterprise edition. Oracle executives confirmed in interviews last week.

These compare to the regular prices of $295 per concurrent user for Workgroup Server and $1,995 per concurrent user for the Enterprise edition. Users can retain the older prices if they wish.

Internet access to databases is not a huge issue

yet, but it will become one soon. About 30% of Oracle's users will probably open up their sites to Internet users by year's end, Oracle marketing vice president Shari Simon estimated.

Oracle isn't the only database management system supplier to rearrange its pricing to accommodate the Internet. All the vendors allow changing

Database access

license status — from Internet/network to Internet — at any time. They allow a mix of the two styles with a compromise price.

Three other vendors — Sybase, Inc., Computer Associates International, Inc. and Microsoft Corp. — announced new policies in the past three months.

Sybase charges simply by whether a machine is a PC or a Unix workstation. CA uses a mix of the number and type of processors. Microsoft takes a different tack, charging $2,995 for a separate piece of software that permits unlimited Internet

IBM will pitch wireless unity

By Mindy Blodgett

Computer giant IBM is weighing in on the mobile game with a wireless communications package that industry sources say provides access to the enterprise network — without the worry of incompatible configurations or communications providers.

IBM's Networking Software Division this week will unveil its Artour wireless communications package, sources close to the company said. This client/server middleware will support connections across a variety of competing wireless networks, including RAM Mobile Data, ARDIS and Cellular Digital Packet Data. The software won't require modifications to back-end applications.

Observers said Artour is the kind of middleware that wireless users and those who have been leery of the technology have been waiting for. Without middleware, wireless laptop users need special modems configured for a specific network or wireless provider, and they can communicate only in areas served by the designated carrier.

The announcement will be made this week at the Network Unplugged show in San Jose, Calif. IBM officials declined to discuss details, however.

The IBM aura will enhance a wireless market that sorely needs a jump start, observers said.

"You have all the power of IBM behind this — the Think Pads, the service support," said John Gillott, an analyst at International Data Corp./Link Resources in Austin, Texas. "That is very, very big, very significant. The IBM name will legitimize wireless for those MIS directors and SNA gurus who have been avoiding wireless."

Artour will offer Internet Protocol (IP) and wireless 3270 termi-

Mixed Grades for High-Tech Ed

At this year's crop of IS graduates gets ready to hit the streets, concern arises about a disconnect between buyers and suppliers of new talent. In an exclusive Computerworld survey, companies give undergraduate programs mixed grades in teaching the hottest technical skills. New national efforts by IS leaders and academics aim to close the gap between ivy halls and corporate walls.

See Careers: Special Report, page 78

WHAT'S INSIDE

- Ready to share in the profits of groupware? Try investing in Notes developers. See this and other stories in our new Finance & Investing section. **page 101**

- AT&T's Bell Labs is taking some heat by working on Inferno, a rival to Sun's Java language for the Web. See story, **page 6**, by Frank Hayes.

- As ATM prices plummet to less than $500 a seat, IS managers are losing control of who's buying what. See story, **page 16**, by Bob Wallace.

You can't rely on the Internet to be your business telephone service yet, our reviewer says. See The Internet section, page 61.

Choice Cuts

The newly passed federal law protecting kids from indecency on the 'net is under fire. While bill sponsor Sen. Jim Exon (left) says the law attacks weirdos, privacy crusader Marc Rotenberg (right) says it endangers free speech. See In Depth, page 74.

Computerworld's new puzzleman, Rick Bennett, bikes 200 or more miles each week, writes high-tech books and ad copy and, oh yes, crafts cross-word puzzles in his spare time. See page 106.

News

altcw

3Com Corp.'s *Eric Brahamou*

A French accent may be a plus in Silicon Valley these days. A striking feature of the recent IT Forum '96 in Paris was that all the keynote speakers from U.S. firms had roots in France. The French-speaking luminaries included Jean-Louis Gassee from Be, Inc., Eric Benhamou from 3Com Corp., Philippe Courtot from Verity and Patrick Perez from Neuron Data.

— *Cara A. Cunningham, IDG News Service*

Digital Frontiers

By 2000, the PC will be ultrapersonal, according to technology forecasters at Battelle Memorial Institute in Columbus, Ohio. Home and office PCs will recognize your voice, follow voice commands and brief you on your favorite topics. Also on Battelle's list of hot technologies are "smart maps and tracking systems." Global positioning systems will keep travelers from getting lost and will locate people's cars, children and pets. Battelle gives a vote of confidence to digital cash. "Pockets will rarely jingle in 30 years as credit-card-size smart cards begin to replace cash [and] house and car keys," the group says.

The following undocumented — and entirely fictitious — error messages for Windows 95 are circulating on the Internet:

- WinErr:001 Dynamic linking error. Your mistake is now in every file.
- WinErr:004 Erroneous error. Nothing is wrong.
- WinErr:005 Multitasking attempted. System confused.
- WinErr:009 Horrible bug encountered. God knows what has happened.
- WinErr:00F Unexplained error. Please tell us how this happened.
- WinErr:014 Keyboard locked. Try anything you can think of.
- WinErr:018 User error. Not our fault. Is not! Is not!
- WinErr:079 Mouse not found. A mouse driver hasn't been installed. Please click the left mouse button to continue.
- WinErr:103 Error buffer overflow. Too many errors encountered. Additional errors may not be displayed or recorded.
- WinErr:678 This will end your Windows session. Do you want to play another game?

Nerve to ponder

Authorities are warning travelers that laptop computers have become a prime target for theft at European airports. One method involves placing the laptop off the security X-ray conveyor belt when the traveler is detained at the walk-through metal detector.

SurfWatch software, which blocks access to smutty 'net sites, briefly put the White House Web site off-limits because it has photos of "couples." *The Washington Post* reports the site was reinstated after it was determined the "First Couples" photos are standard portraits of the Clintons and Gores.

In perhaps the largest single calculation ever performed by a computer, IBM physicists identified key properties of an elementary particle known as a "gluebull." The calculation, handled by 448 microprocessors in a massively parallel supercomputer, required 400 million billion operations and took a little more than two years to complete.

Proving it is possible to sell big-ticket items via the Internet, a Ford dealership in Hollywood, Fla., last month sold a 1996 Explorer from its Web site. http://www.buyaford.com/ford.

Send contributions of off-beat news, lists and anecdotes to mbetts@cw.com.

Impress your co-workers *when your laptop computer goes truly mobile and navigates along the office corridors as a two-wheel drive robot. The Pioneer 1 Programmable Computer Convergence is available for $2,495 from ActivMedia in Peterborough, N.H.*

f

actoid of the week

Advertising revenue on the Internet will grow from $55 million last year to $4.8 billion by the year 2000 — and will below the ad revenue for television and print but surpassing that of radio. On-line ad rates vary greatly, from $10 to $450 per 1,000 viewers.

Source: Jupiter Communications Co., New York

Microsoft Web server freebie irks 'net rivals

By Kim S. Nash

Microsoft Corp. is under fire from some World Wide Web server rivals for integrating its new Internet Information Server (IIS), for free, with the Windows NT operating system.

The bundling is potentially unfair, two vendors said last week. One startup, which called the approach "potentially monopolistic," sent a complaint to the U.S. Department of Justice the day after IIS shipped last week.

The Internet Factory, a four-employee, 7-month-old company with a would-be competitor to IIS, urged the Justice Department to investigate.

Another Windows NT Web server maker on the East Coast initially called the bundle unfair but backed away from that label. "We'd rather not be associated with the 'unfair practices' camp. We have a strategic relationship with Microsoft," a company executive said.

Microsoft acknowledged receiving The Internet Factory's complaint, but denied IIS/NT is unfair. In fact, the vendor decided not to sell IIS as a separate product at the behest of users, maintained Dave Malcolm, a product manager at Microsoft in Redmond, Wash.

But Ernest Priestly, president of The Internet Factory in Pleasanton, Calif., doesn't buy that. He said last week that Microsoft opted to pair IIS and NT to try to squelch competition from Netscape Communications Corp. and smaller companies such as his.

Netscape officials, meanwhile, said they are confident their products will do well despite Microsoft's freebie.

A Justice Department spokeswoman wouldn't say whether the government will explore the new allegations as part of its investigation of Microsoft. In a similar case last year, the Justice Department investigated the bundling of The Microsoft Network software with Windows 95 but decided not to block the release.

The Web server issue is somewhat different because Microsoft could weigh in more forcefully in a relatively immature market, analysts suggested.

On the other hand, Microsoft is far from having the kind of monopoly power on the Web that it has with PC operating systems. Unix is far more prevalent as a Web server platform than is Windows NT.

Yet tight integration of IIS with Windows NT is what some customers want. "I don't know if unfair competition ... regarding the bundling is so important. But what is so important is that they [IIS and NT] work well together," said Linda Parker, a senior vice president for emerging delivery services at US Bank of Washington in Seattle.

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Bell Lab's Inferno aims to rival Java

While parent AT&T quietly licenses Java

By Frank Hayes

Java may be hot, but Inferno could make things even hotter.

Bell Laboratories last week revealed it is working on Inferno, a rival to Sun Microsystems, Inc.'s Java language for developing applications on the World Wide Web.

Corporate developers who use Java weren't surprised by the news. "It's inevitable. Someone was bound to say, 'We can do that better,'" said Rick Bresnan, manager of Web services at National Semiconductor Corp. in Santa Clara, Calif. "It's going to provide some competition and force [more rapid] development of that marketplace."

Bell's parent company, AT&T Corp., would give no delivery time for Inferno. In the meantime, AT&T has quietly licensed Java, *Computerworld* has learned. That gives AT&T the option to offer Java-based products, including development tools, as part of its Internet-related offerings.

"There are some people who think Java is just a flash in the pan. To have somebody such as Bell Labs say, 'This is a big thing, and we want to be part of it' — that lends Java a lot of credibility," said Rob Reese, a senior software developer at Virtual Vineyards in

Look, Ma, no browser

IBM said last week it is adding Java support to its OpenDoc component system for Windows, OS/2 and Unix. At OpenDoc, part of development would let users run Java programs without a Web browser.

Los Altos, Calif.

Programs written in Java can be downloaded across the Internet and run without change on many kinds of computers. The language has also been licensed by IBM, Microsoft Corp. and other vendors.

When it ships, Inferno will have a tough time catching up to Java, which has been under development since 1990. "Java has so much momentum right now, it's hard to take something like this too seriously," said John Cawkowski, a software architect at the Coris division of R. R. Donnelley and Sons Co. in Chicago.

The Bell Labs research team is leading AT&T's 8-month-old Inferno effort. The team previously developed Unix and the more recent Plan 9 operating system, said Dennis Ritchie, head of the systems software research department at the AT&T research unit.

The existence of Inferno leaked last week when Ritchie mentioned the project in a speech at UniForum '96 in San Francisco. He confirmed that Inferno will compete with Java but didn't discuss details of the language.

There is a downside to Inferno's emergence, Bresnan said. "We're encouraging our partners to develop Java software, and when they see news like this they say, 'Wait a minute, should I dump a bunch of money into developing with Java when maybe there's something better coming?' But in the long run, that competition is good," he said.

Bell Labs soon will become part of Lucent Technologies, Inc., one of three public companies to emerge from the restructuring of AT&T. Company officials refused to comment on Ritchie's statements, citing Securities and Exchange Commission restrictions.

Users playing the integration game

By Bob Francis

Corporate users have identified the lack of integrated management tools as the Achilles' heel of distributed computing.

But change is in the offing. Companies are learning up to provide suites of network management products, and systems managers are forming their own user groups as well.

For users, the move to integrated management suites can't happen soon enough. "Part of the reason we're in this mess is that vendors decided to take off in their own direction," said Richard Hirster, a database administrator at Bell Atlantic Information Services in Beltsville, Md.

One hot button of integration at the moment is network backup. Cheyenne Software, Inc. last week announced plans to integrate its ARCserve backup products with Symantec Corp.'s Norton Enterprise Framework and intel Corp.'s LANDesk LAN management products.

At the same time, Seagate Technology, Inc. announced its storage management group, which consists of Palindrome and Arcada, which the company will eventually integrate with its enterprise management group.

Other vendors of network management suites also have added backup to their products. McAfee Associates, Inc. last year added ServerStar to its Saber LAN management package.

For users such as Phillip Wood Jr., information systems manager at Cape Fear Medical Center in Fayetteville, N.C., the integration of these packages has eased the administrative burden.

"We used a variety of backup and administration packages before, but they never worked together that well. I don't know why someone didn't think to integrate backup and LAN management earlier," he said. Cape Fear now uses McAfee's LAN management suite.

In the offing

Changes also are taking place at the systems and network management level.
- Hewlett-Packard Co. this month integrated OpenView, its network management platform, with its systems management tools.
- IBM bought distributed systems management vendor Tivoli Systems, Inc. to buttress its position on that area.
- NCR Corp. added Operations Advantage, a suite of systems management applications for its servers tied to HP's OpenView.

"What we're seeing is the first inkling of maturity in the distributed systems management industry," said Chris Byraen, an analyst at Meta Group, Inc. in Reston, Va. But just because these companies are purchasing, partnering and merging doesn't mean these systems will all work together.

For instance, Seagate's backup software packages use different databases. This makes it difficult to share information between the two products. Company officials said they will reveal the products over time to integrate the packages.

The management partnering game

Consolidation and partnerships are the rage among systems management companies as they try to solve the problem of distributed systems and network management. See if you've kept score. Match the systems management company on the left with the application vendor on the right that the company has acquired or partnered with. In some cases, companies have teamed up with more than one management partner.

SYSTEMS MANAGEMENT COMPANIES	APPLICATION VENDORS
■ Microsoft	■ Cheyenne
■ BMC Software	■ Palindrome
■ IBM	■ Saber Software
■ Wang	■ Arcada
■ Seagate Software	■ Brightwork Development
■ McAfee	■ Mountain Technology
■ Intel	■ Frye Computer Systems
Bonus	■ Network Management
■ Cheyenne	■ HawkNet
	■ Tivoli
	■ Avail
	■ Chili Pepper

SCORING: Give yourself one point for each correct answer.

10-12	Network management guru
7-9	Time for a systems upgrade
4-6	Better check for a systems crash war
1-3	Evacuate the building, but print your resume first!

Correction

Due to an editing error, a story about plans for a merged Information Software, Inc./Bustris database product in the Feb. 12 issue had an incorrect headline. No delays in the product have been announced.

Management GAMES

A alliance of users and vendors plans to make a game of managing distributed enterprise systems, but they aren't playing around.

The game is the Global Alliance for Managing Enterprise Systems GAMES), a group announced last month that is devoted to cross-platform systems management.

The group includes both users from several large corporations and vendors, such as founding members Platinum Technology, Inc., IBM and NCR Corp.

GAMES will look at managing the whole enterprise, from the LAN to the mainframe, said Richard Hirster, a database administrator at Bell Atlantic Information Services and a member of the group. "We thought about looking at just one piece of the puzzle, but realized we needed to get the whole picture to be effective," he said.

The group will focus on determining what users really need to manage distributed enterprise systems, said Chris Byrnes, an analyst at Meta Group. GAMES plans a conference in June. The organization can be reached at (800) 298-5004.

— *Bob Francis*

Apple CEO seeks customer talks

Summits said to target enterprise issues

By Lisa Picarille

A handful of influential Macintosh users at several large companies last week said they have been asked to participate in a summit of Apple Computer, Inc.'s Top 100 customers with CEO Gilbert Amelio.

An Apple spokeswoman confirmed that the company will hold two such events next month. Both events will provide an opportunity for Amelio to meet key customers, she said. "Meeting with customers is a big priority of GF's. He really wants to reaffirm Apple's commitment to business customers," she said. And with good reason.

Some customers are being scared off by the continuous stream of bad news that is emanating from the Cupertino, Calif., computer maker. The bad news includes financial woes — results for the current quarter will be worse than the last — the ouster of CEO Michael Spindler and pending layoffs.

Deserting the ship

Recently, some of Apple's biggest customers, including Ernst & Young and NASA's Johnson Space Center in Houston, have abandoned the Macintosh in favor of standardizing on the Windows/Intel Corp. platform.

But Du Pont Co.'s Advanced Computing Technology department in Wilmington, Del., hasn't abandoned the Macintosh. The company has more than 3,000 Macintosh systems.

David Pensak, a senior research fellow and principal consultant at Du Pont, said he would welcome the opportunity to tell Amelio that he wants clarity from Apple.

Pensak said the first words out of his mouth would be, "Tell us what you're going to do and then, by God, just do it."

In addition, Pensak said, "I want

New Apple CEO Gilbert Amelio has taken steps to quash sale rumors and ease customer fears

them to take a stand on technology, and then let the customers decide if they want it. [Apple] should support more open standards, but at the same time, they should stop trying to be all things to all people."

One way Apple could do that, according to other Macintosh users, is to cut back on the number of machines they offer.

"Apple's product line is too confusing and undifferentiated. They need to pare it down," said an information systems manager at a large, East Coast investment bank, who requested anonymity. The bank has more than 300 Macintoshes.

Stephen Priest, director of information systems at Dartmouth/Hitchcock Medical Center in Lebanon, N.H., said he would like Apple to more clearly convey its message to third-party software developers. The hospital has 2,500 Macintoshes.

"We are finding that a lot of our software business partners are not doing Mac applications, or they are just porting Windows applications, which don't take advantage of the Mac capabilities," he said. "Apple needs to stimulate more interest from the developer community."

> "Tell us what you're going to do and then, by God, just do it, I want them to take a stand on technology, and then let the customers decide if they want it. They should support more open standards, but at the same time, they should stop trying to be all things to all people."
>
> — David Pensak, Du Pont Co.

Most Macintosh users agreed that for Apple to be successful, it needs to stop preaching to the choir.

"I would also like Apple . . . to bring in PC users and ask them, 'What would we have to do to get you to replace those systems and switch over to the Mac?'" Pensak said.

One industry watcher said Amelio is on track so far. "When you come into a troubled company, you want to put people at ease," said Kimball Brown, an analyst at Dataquest, Inc., a market research firm in San Jose, Calif. "You really need to rally the external as well as the internal troops."

CompuServe restores newsgroup access

CompuServe, Inc. in Columbus, Ohio, last week restored access to 200 Internet newsgroups, many of which contain sexually explicit content. The move ends a saga that started around Christmas, when German authorities ordered the blocking of newsgroups that included some sexual content but also discussion of gay-rights political issues and support discussions for survivors of child abuse. CompuServe will now allow users to selectively block newsgroups and Internet sites that contain objectionable materials.

Intuit tax program taxes users

Tax time is nearly here again and so are errors in tax software from Intuit, Inc., according to officials at the Menlo Park, Calif., company. Intuit has posted notices of several problems with this year's TurboTax and MacInTax packages on its home page on the Internet as well as on its automated 800-number telephone line. The company will also send a letter describing the problems to users next week. Although officials described the problems as less serious than last year's, Intuit will pay any penalties and interest for taxpayers affected by the bugs.

Mobile Internet product to debut

Shiva Corp. in Burlington, Mass., this week announces WebRover Stack, a remote access package that uses Shiva's LanRover technology. The WebRover stack includes a single platform for issuing and integrated Services Digital Network dial-in and dial-out as well as a dedicated connection to the Internet. WebRover Stack is augmented with Shiva Integrator 200, a leased-line router. Prices for the WebRover Stack start at $5,999.

Cisco router links to HP

Cisco Systems, Inc. said it will ship a router module later this fall that builds Cisco's Internetwork Operating System software into Hewlett-Packard Co.'s AdvanceStack stackable hubs. By midyear, Cisco will also develop interfaces for its high-end 7500 router family that use HP's 100VG-AnyLAN.

Unix groups to unite

At UniForum '96 in San Francisco last week, X/Open Co. and the Open Software Foundation detailed plans for consolidating into a single open systems consortium called The Open Group. Vendors footing the bill for the two organizations hope the companies involved will save money. However, they are retaining their own identities and will operate as separate divisions under The Open Group umbrella.

Digital ends Cirrus talks

Digital Equipment Corp. announced last week that it had ended talks with semiconductor maker Cirrus Logic, Inc. in Fremont, Calif., to lease a portion of Digital's underused Hudson, Mass., chip plant. The announcement came after Cirrus unexpectedly posted a loss and said chip demand, particularly for its PicoPower mobile chips, was down.

New OS/390 handles year 2000

When IBM introduces its bundled OS/390 mainframe operating system this week, it will

detail plans for a second release due in September or October. That version will include full 32G4 branding as an open system. IBM will also complete work by then to ensure that all of the products in OS/390 can handle the year 2000 date change, which threatens to derail applications with two-digit date fields.

Java to link with databases . . .

JavaSoft is readying a specification for linking Java applications with relational databases. This week, the Sun Microsystems, Inc. subsidiary will announce the Java Database Connection, a programming interface developed with Oracle Corp., Sybase, Inc., Informix Software, Inc. and a dozen other vendors. The specification, which will be officially released on March 8, will define how programmers can query and update database tables from within Java programs.

. . . and to expand as well

Sun will build a bare-bones operating system based on its Java software into an Internet client that it will ship late this year. Code-named Kona, the operating system will include multithreading and networking support, but it won't have a file system or virtual memory capabilities, officials said last week. Kona will allow the Internet client to run Web browsers other than Sun's own HotJava and simple embedded applications.

Indecency provision blocked

A U.S. District Court judge issued a temporary restraining order last week, blocking a provision in the new telecom reform law regarding the online transmission of "indecent" material to minors. Judge Ronald Buckwalter found phrasing in the recently passed telecommunications law too vague and undefined.

United unifies messaging

United Airlines is upgrading its file-sharing mail system with HP's OpenMail client/server messaging software. The airline will first install the software at its Elk Grove Township, Ill., headquarters, with plans to roll out OpenMail to about 10,000 U.S.-based employees by year's end. Similar client/server electronic-mail packages from Lotus Development Corp., Novell, Inc. and Microsoft Corp. are either just beginning to ship or not yet on the market.

SHORT TAKES Netscape Communications Corp. plans to buy Paper Software, Inc., a virtual reality tools maker in Woodstock, N.Y., for an undisclosed sum. . . . Microsoft Corp. shipped the second release candidate for Exchange Server to beta customers last week. It is due out by the end of March. A Microsoft spokeswoman said no major changes were made from the first release candidate, which shipped in early December.

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Solutions for a small planet

IS managers may lose control

Fall in ATM prices could switch buying power

By Bob Wallace

For information systems managers across the country, ATM soon may stand for Alo-gether Too Much.

That's the contention of industry analysts who say plummeting prices for 25M bit/sec. Asynchronous Transfer Mode (ATM) workgroup packages will make it tough for IS shops to centrally control the purchasing of these systems.

The cost per seat of extending a 25M bit/sec. ATM pipe to the desktop — the price of a port on a 25M bit/sec. ATM switch and an adapter card — has dropped from more than $1,000 a year ago to less than $500 today.

"These switches will likely become the PCs of the 1990s," said Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consultancy. "The price of 25M bit ATM workgroup switches is taking so fast that office managers can afford them on their own, without funding or approval from central IS."

If that happens, users say ATM would spell trouble for IS managers.

"This could be a tremendous problem for IS, with the bottom line being: who's going to service and support these switches?" said Ted Kull, project manager for systems engineering at Educational Testing Services (ETS) in Princeton, N.J. "IS managers have to make it clear that if [workgroups] buy these switches, they're running the risk that IS may not be able to provide adequate support. So the buyers would have to accept the consequences."

Big Blue's bargain

Vendor	Price
Madge	$583 for switch port; $375 for $430 for adapter card
WhiteTree	$650 for switch port; $200 to $300 for adapter card
First Virtual	$500 for switch port; $200 to $300 for adapter card
IBM	$495 for switch port and adapter card

ATM is the next-generation switching technology that is faster and more efficient than today's switching schemes. It switches voice, data and video, though most ATM products today are used for bandwidth-hog data applications. ATM at 155M bit/sec. increasingly is being used in backbone networking systems, whereas ATM at 25M bit/sec. is being pushed and used as a desktop networking option.

IBM blew the top off the market for ATM at 25M bit/sec. a few weeks ago by offering a workgroup package that lowered the price per seat from $1,000 to $495.

"IS managers are going to see users begin to develop ATM islands; islands that they'll inherit, not direct," said John Boyd, chief networking technologist at ATM user Northeast Utilities, Inc. in Berlin, Conn.

Boyd said it is wiser to deploy ATM from the campus backbone out toward the desktop rather than the reverse. "That way, when the rogue users come to you for ATM connectivity to the desktop, you can provide it. If you don't, you'll get caught flat-footed, and it'll take eight to 10 months to satisfy that user demand."

But that isn't slowing down the vendors that pioneered this nascent market.

Computerworld has learned that White-Tree Technologies, Inc. a pioneer in this market, will announce in early March a low-cost 12-port ATM workgroup switch called the WS2550. It will support Fast Ethernet as well and will cost 10% to 20% less per port than WhiteTree's existing switch.

'LAN in a can'

Unisys Clearpath servers will run CMOS, Intel chips

By Neal Weinberg

Unisys Corp. is building the Sybil of enterprise servers — multiple personalities housed in a single body.

Computerworld has learned that the Clearpath line is slated for introduction in April or May. It will run Unisys A Series or 2200 Series mainframe operating systems and Unix or Windows NT in a single cabinet.

"It's a LAN in a can," said Charles Burns, an analyst at Gartner Group, Inc. in Stamford, Conn. Burns said the Clearpath server will have an internal network that will let Intel processors run in tandem with CMOS mainframe chips.

For users, the two most immediate advantages of a Clearpath box are improved network management and cost savings, Burns said. As Clearpath evolves, users will be able to run parts of applications on whichever processor is best suited, he added.

"The whole Clearpath strategy is very good," Burns said. "And I haven't seen anybody else offering up to do something like this."

Unisys customer Ronald Huff, divisional vice president of systems at National Data Corp. in Atlanta, said Clearpath would be especially attractive for mainframe users who are looking to offload

legacy applications to Unix.

"Conceptually, it's pretty fascinating," said Craig Burlingame, executive director at the Criminal History Systems Board in Boston. "Moving data across those various software architectures on a common platform has its benefits."

Wait-and-see

But Burlingame, whose agency processes 600,000 transactions a day from the Massachusetts police and court systems on a Unisys mainframe, is taking a Missouri stance on Clearpath: "It's one of those 'show me' works, and I'll believe it' kinds of things."

Burlingame wants to be assured that he will continue to have mainframe reliability if he moves

Clearpath enterprise server

Features:	Combines Intel and CMOS chips; runs mainframe, Unix and Windows NT applications in a single box
Benefits:	Easier system management, cost savings and improved efficiency
Scheduled release:	April/May

applications to Unix. "Not even one transaction can fall off the cliff," he said.

Brian Jeffery, an analyst at International Technology Group, Inc. in Mountain View, Calif. said Clearpath is a move in the right direction for Unisys because the Unix market is shifting into interpriseviable applications.

And users are looking for the high availability that mainframes provide. Clearpath will be more than just a box, noted Bob Sakakeeny, an analyst at Aberdeen Group, Inc. in Boston. He said Clearpath will include consulting services and support besides hardware and software.

Strategically, Clearpath lets Unisys users preserve their legacy applications and add Unix and Windows NT applications to the same system, Sakakeeny explained.

In a related move, Alan Lutz, president of the Unisys Computer Systems Group, last week said the company will stop developing its own flavor of Unix. Instead, it will adopt the unified Unix that is being developed by SCO, Inc. and Hewlett-Packard Co.

Lutz said Unisys will shift its development efforts to enterprise-wide Windows NT servers, which will be introduced later this year.

'net volume, security on vendor table

By Bob Wallace

Traditional internetworking vendors are just now beginning in earnest to offer products that will enable corporate America to make more efficient, and far less expensive, use of the Internet.

Cisco Systems, Inc., Bay Networks, Inc., Cabletron Systems, Inc. and 3Com Corp. are preparing wares that were designed to help information systems managers cope with network challenges caused by the soaring popularity of the Internet. These include high volumes of network traffic, security and network address shortages.

The new products will go beyond remote access routers and Integrated Services Digital Network access gear.

For example, Cisco is preparing two software packages that will help IS managers build multiple World Wide Web sites that appear to users as a single address. While one package distributes user calls among servers at one site, the other will spread the load across far-flung servers (see chart).

"That assumed like great functionally," said Brian Hengen, a systems administrator at the Electronic Industry Association, an

Arlington, Va.-based trade association that represents the electronics industry. "We're still looking at using the Internet to conduct business, and along with better security, this would be a capability we would really need."

"Users want to see their vendors have a presence on the Internet," agreed Matt Maguire, manager of end-user technologies at Domino's Pizza, Inc. in Ann Arbor, Mich. "If we do decide to move forward, we'd want Bay, which is our internetworking vendor, to offer products similar to Cisco's."

Should be leaders

One user said internetworking vendors have deeper pockets and should be providing better Internet products than many of the small Internet gear makers.

"I'd like to see 3Com come out with an easy-to-use and affordable Internet firewall package with solid security features," said Alan Robson, director of information services at Val-Pak Direct Marketing Systems, Inc. in Largo, Fla.

How Cisco's Distributed Director works

1 A user dials into a company's World Wide Web page and is directed through the Internet to the company's Web server

2 If the server is busy, instead of returning a busy signal, the Cisco software redirects the user's call to a second server located elsewhere

3 The user gains access to the company's Web page, without having to redial

"That's a seminiche market I think they should enter."

The Top 4 internetworking vendors recently shared parts of their Internet product strategies:

- FGV, Inc., a company that Cisco is in the process of acquiring, this week will announce new Internet server software that helps users build corporate intranets.
- Executives from Bay last week confirmed plans for a major Internet-related rollout that comprises new products, strategic partnerships, alliances and even acquisitions. An announcement will be made at Networld/Interop '96 next month.
- A Cabletron executive said the company is developing software that will enable its high-end MMAC-Plus switching hub to be used as a node on the Internet if the current routers become overwhelmed.

The switch maker also plans to outline its Internet strategy by the summer. Officials confirmed that Cabletron is "in discussions with

all the major Internet service providers and Baby Bells" about buying the switch and new software.

3Com said it plans to enter the Internet products market within six to 12 months, with offerings for users, consumers and Internet service providers.

"This is like the beginning of the PC revolution, where the market was small and wide open to anyone with new ideas and innovative products," Hagen said. "I'm very happy to see vendors like Cisco enter this market, which has plenty of room for other internetworking vendors and their best ideas."

In fact, internetworking vendors first entered the Internet market a few years ago with the introduction of remote access routers. But, like early telephones with the long-distance network, they did little more than give users network access.

📰 **Word** processor makers add **'net** features. See **page 54**.

NEC offers low-end line of notebooks

By Mindy Blodgett

NEC Technologies, Inc. in Mountain View, Calif. this week jumped into the low-end portable computer market with some aggressively priced high-end features.

By this pricing, NEC is definitely signaling that they want to go toe-to-toe with Toshiba," said Mike McGuire, an analyst at Dataquest, Inc. in San Jose, Calif. "They are being a very alert competitor, and these machines are priced quite well."

The NEC Versa 2200C is aimed at the corporate market and will cost $2,449.

The NEC Versa 2205C and the NEC Versa 2205C, priced at $2,499 and $1,799 respectively, are slated for the consumer market.

The NEC announcements join a bunch of notebooks unveiled for the "value," or low-end portion, of the portable market in the past couple of weeks.

Market leader Toshiba America Information Systems, Inc. in Irvine, Calif., released a new Satellite 100CS at a price of $1,999. It the lowest-priced such offering on the market so far.

The new NEC Versas will have 9.5-in. screens and will weigh 6.3 pounds. NEC said it went with the 9.5-in. screen in order to provide an active-matrix color display at a cheaper price.

Back then, you stored a lot of data, not knowing that someday retrieval might be difficult. But PLATINUM InfoSession forms the long-awaited bridge between your mainframe data and client/server environment. InfoSession is more cost effective than other middleware solutions because it doesn't force you to rewrite legacy application code. Plus, it's much faster than screen scrapers and less invasive than gateway solutions. And InfoSession 2.0 supports the most current standards such as ODBC and protocols like LU6.2 and TCP/IP. Give us a call for a free demonstration. We'll have your workstation accessing your mainframe data in just half a day. (Cool, huh?) For more information, email or call us today.

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Temp service seeks to fill networking gaps

By Patrick Dryden
BOSTON

Finding a network support technician should be as easy as ordering a computer or office supplies.

That's the goal of contract staff-1-800-NETWORK, a unit of MacTemps, Inc., which made its debut last week here at Networks Expo.

The 10-year-old, $56 million parent company places more than 2,300 Macintosh experts daily from 42 U.S. offices to fill short- or long-term staff assignments. The new venture targets an even greater need among organizations of all sizes for help maintaining networks.

For an hourly fee, 1-800-NET-WORK will dispatch tested personnel backed by a "110% guarantee." These people can fill in on a help desk, administer LANs or electronic mail, perform upgrades, set up remote-access and Internet links or perform tasks such as network performance evaluation and optimization.

Surveys by the New York-based Outsourcing Institute show tremendous demand for flexible staffing, according to Michael F. Corbett, director of research.

"Information technology organizations are looking to get the exact resource they need when they need it," Corbett said. 1-800-NET-WORK is the first venture he has heard of that offers a suite of technology-support services on a temporary basis.

But quality is a big concern for potential users and others experienced with the shortage of skilled network managers, planners and troubleshooters.

"I'd prefer to stick with the small consulting group we know and trust for help with problems we can't address ourselves," said one attendee, the information technology manager at a local manufacturer.

"If users have so much trouble finding and keeping network management experience, where will this service find anyone good to send?" wondered Sylvia Clark, an analyst at Aberdeen Group, Inc. in Boston.

Many so-called experts merely pass an exam to earn a Certified NetWare Engineer (CNE) rating,

for example, yet never administer a production network, said Bob Harbison, a principal at Network Integration Consultants, Inc. in Sausalito, Calif.

"Beware the 'paper tigers' and laid-off losers who only know the acronyms," he said.

Harbison recently tested 49 CNEs for his consultancy on a live LAN and found only one who could actually add users to the

LAN and customize their privileges.

• Officials at 1-800-NETWORK in Cambridge, Mass. claimed to have between 50 and 100 personnel in each of eight markets who have passed similar tests on the company's wide-area network. Initial coverage includes Atlanta, Boston, Cleveland, Dallas, Denver, Detroit, Los Angeles and Seattle.

The bait

The new unit attracts personnel by providing them with full benefits and handling taxes. Clients pay an hourly fee that varies by the skill level required.

"They come in handy, so we don't have to have full-time staff. And we can get in-house training on our own system," said Linda Estrella, information services manager at Boston law firm Campbell & Associates.

Another employment twist is outsourcing network analysis. See page 53.

IBM taps the Web for LAN management

By Patrick Dryden
BOSTON

IBM demonstrated an unusually innovative and broad response to users' management demands last week.

At Networks Expo here, IBM previewed a workgroup tool kit that adds support for Windows NT servers or stations and enables remote administration via the Internet.

Version 4.0 of IBM's NetFinity

PC and server manager will ship in May under the brand name PC SystemView. The product feeds two needs. Managers crave more tools to monitor Windows NT systems and LANs, and they seek remote control from a universal console — any World Wide Web browser.

"This sounds good for a disaster scenario and for whoever has pager duty on the weekend, because we all have Web access," said Tom Lautzt, network administrator at US Air in Arlington, Va.

Administrators moved it at home could still reach out to manage machines in Pittsburgh, Lautzt said. And all five of his servers — including the Windows NT system — could have a back door for management. Secure Internet access provides a separate path into each system and attached stations to fix problems during network disruptions.

As with NetFinity, IBM will bundle PC SystemView with its PC servers, desktops and portables and offer its components separately to support other vendors' PCs.

The services software, which runs on every server or station to be managed, will cost $39 per system. The Manager, which will cost $449, runs on a desktop PC as a management console and as a gateway into the LAN for any remote manager equipped with TCP/IP and browser software.

Systems support

Supported systems will include IBM's OS/2 2.11 and 3.x or Warp, Microsoft Corp.'s Windows 3.x, Windows 95 and NT, and Novell, Inc.'s NetWare. Beta testing began last week.

NetFinity has succeeded in the workgroup management market through IBM's bundling, analysts said. Now non-IBM users might be interested.

"This version could attract many new users if they see it as a management tool, not as IBM's tool," said John Dunkle, an analyst at Workgroup Strategic Services, Inc. in Portsmouth, N.H.

NetFinity doesn't have a competitor with this depth of capabilities for remotely managing everything from assets to diagnostics, according to Dunkle. Jumping on the NT train and enabling management by a local connection to the Web boosts NetFinity's appeal.

"But given the legacy of IBM management tools, the misperception persists that NetFinity is proprietary to IBM hardware," Dunkle said. "This is the [first] one that breaks the mold."

Rebranding NetFinity won't boost its appeal, however, because the SystemView name isn't a powerful force yet in the broad systems management market, said John Rymer, an analyst at Giga Information Group, Inc. in Cambridge, Mass. Major new features are nice, but they won't drastically improve IBM's sales, he said.

"We don't often get a chance to vault beyond our Big Blue image, so we're trying to run with this," said Mitch Medford, IBM product manager.

Windows NT Server's management utilities are both good and bad. See page 53.

FormFlow upgrades ready to go

Delrina Group will announce a major upgrade to its FormFlow forms routing product at the E-Mail World & Internet Expo this week in San Jose, Calif.

The Toronto-based vendor will enhance the following four major areas of FormFlow: routing, application development, security and forms management.

"Individually, there isn't a lot of stuff that makes me sit up and say 'It's amazing,'" said Steve Weissman, president of Kinetic Information, a consulting firm in Waltham, Mass.

"But as a package, it's a strong upgrade," he said.

One of the strongest features in this upgrade is the easier form management provided by Form Library, said John Zyskowski, an analyst at Patricia Seybold Group in Boston.

In the current version, users are limited to storing forms and applications on a file server. Now they can store them on a database as heavy large objects, on an Internet file transfer protocol site or within a folder in Microsoft Corp.'s Exchange. This makes for easier accessibility, Zyskowski said.

— Saruchi Mohan

Monitoring tools

More network and server management tools will soon be spun into the Internet's Web.

Compaq Computer Corp. in Houston will add Internet tools to its Insight Manager server management package. Hewlett-Packard Co. in Palo Alto, Calif. is preparing Internet tools for its Navigator server management program. The features will be available later this year and will give managers the ability to monitor their PC servers via the Internet.

Network management vendors also plan to incorporate Internet-savvy features. In January, LAN management vendor McAfee Associates, Inc. in

Santa Clara, Calif. and network management supplier Tivoli Systems, Inc. in Austin, Texas, invested in Internet software provider NetGenesis, Inc.

Both plan to integrate Internet software tools from the Cambridge, Mass.-based company with their systems management products. McAfee and Tivoli plan to add Net-Genesis Internet management tools to their network management suites and Internet back-bone developed with NetGenesis in their network management tools. These features should be available by the end of the year.

— Bob Francis

Novell ships free NetWare client for Win 95

Gives full connectivity

By Laura DiDio

Novell, Inc. — after a six-month delay that let arch-rival Microsoft Corp. beat it to the punch — finally began shipping client software that lets Windows 95 users access all of NetWare services.

Novell's so-called NetWare Client 32 for Windows 95 enables businesses to eliminate connectivity barriers to deploying Windows 95 PCs in NetWare 2.x, 3.x and 4.1 environments, the vendor claimed. The software can be downloaded free from vari-

ous on-line services.

The NetWare Client 32 for Windows 95 supports long file names and remote server access and includes a graphical management tool to administer individual users' NetWare file access rights.

It also incorporates the NetWare Applica-

tion Manager, a facility that simplifies the administration of users' desktop applications.

Bob Redding, an information systems manager at the South Carolina Department of Health and Environmental Control in Columbia, S.C., said the software gave his

Windows 95 PCs "a clean interface to the NetWare file servers."

Users can download the NetWare Client 32 for Windows 95 from CompuServe's NetWare (GO NWCL32) and from the World Wide Web (http://netwire. novell.com).

IBM will pitch wireless unity

CONTINUED FROM PAGE 1

mnial emulation support. It will allow TCP/IP-based applications on notebooks and LANs to communicate without modifications — a feature that will make wireless communications more attractive to mobile users, according to industry observers.

IBM's chief competitor in this arena is Racotek, Inc.'s KeyWare, a middleware package that lets users run remote access

Wireless computing

applications over and between several incompatible wireless networks, including ARDIS and CDPD.

KeyWare interfaces with several wireless networks, but users must redesign applications to fit a special Racotek operating system. "The advantage of Artour has over such competitors is that applications don't need to be modified for it.

According to a source close to IBM, Artour is aimed at vertical markets such as sales force automation, insurance and utilities.

It is customizable and can include hardware, wireless modems and the middleware. It uses a compression algorithm to reduce transmission costs.

Artour also will feature encryption for data transfer. Several pricing options will be available.

What's included

The package will work by making it appear to an AIX server that the wireless client is connected to the LAN. Artour will include software for OS/2 and Windows and a gateway to the LAN.

Dave Passmore, president of Decisys, Inc., a consulting firm in Sterling, Va., said the wireless 3270 terminal emulation will be an attractive feature.

"The good news is that the 3270 data stream is very efficient," Passmore said. "It doesn't allow huge amounts of data to be transferred, but it will make sense for such industries as transportation or insurance."

Senior editor Bob Wallace contributed to this report.

IBM server unit swallows Unix pride

NT, Solaris to be offered on RS/6000s

By Craig Stedman
SAN FRANCISCO

IBM's AIX religion and getting more monumental about operating systems.

Trying to broaden the market for PowerPC-based hardware, IBM this week will announce plans to support Microsoft Corp.'s Windows NT and Sun Microsystems, Inc.'s Solaris instead of Unix on some of its RS/6000 workstations and servers. The support will be available by the middle of the year, company officials said. The operating systems will be alternatives to AIX, IBM's own version of Unix.

Other vendors — most prominently Digital Equipment Corp. — have already embraced Windows NT on their RISC platforms. But IBM is the first of the three leading Unix server vendors to cozy up to the Microsoft software and

to offer a rival Unix implementation. Sun and Hewlett-Packard Co. are the other leading Unix server vendors.

NT was demonstrated on several RS/6000s at UniForum '96 here last week, and some IBM customers said the added operating system choices could increase their flexibility and help protect their hardware investments.

Free to choose

"I like having the option" to go with NT, said Dominick Maio, information systems manager at the California Housing Finance Agency in Sacramento, Calif. The agency, which gives loans to first-time home buyers in California, uses a group of six RS/6000 servers to run its network.

The agency is happy with AIX, but NT "is something that I think my organization needs to be concerned about because of the Microsoft juggernaut that doesn't

seem to want to stop," Maio said.

But Maio and others noted that IBM has to get NT and Solaris application vendors to port to the PowerPC architecture or the support for those operating systems will have little practical value.

"It's nice that you get more choice," said Mark Bole, a technical systems supervisor at Pacific Gas & Electric Co. in San Francis-

co. "But it still all boils down to the application and whether it's customized to run on that particular system."

Rich Sevcik, vice president and general manager of HP's Systems Technology Group, said NT has been run on its HP 9000 servers to the fab. "But the bottom line is applications," he said. "Where are you going to get them?" HP

doesn't plan to offer NT until a 64-bit microprocessor with native support for Windows and Unix that it is developing with Intel Corp. ships in 1998.

It wouldn't make sense for HP to market a version of NT for its PA-RISC architecture because the boxes have been "vitally identified as a dead-end architecture," said Jean S. Bozman, an analyst at International Data Corp. "But IBM's not in that same situation" with the RS/6000, she said.

Sun, the most anti-Microsoft of the Big Three Unix vendors, remains openly antagonistic toward Windows NT. "We'll do NT computers when Microsoft starts [reselling] Solaris," said Sun CEO Scott McNealy in a speech at UniForum.

Jeff Mason, vice president of worldwide RS/6000 marketing at IBM, said the vendor is working with Microsoft and Sun's SunSoft, Inc. unit to get development tools and databases ported to the PowerPC.

Warp Server ready to ship

By Stuart J. Johnston

On the eve of the launch of IBM's OS/2 Warp Server, its beta testers are waiting for the final code with bated breath.

"Those [users] who have seen it will migrate to it," said Josiah Ajiroll, a systems analyst at the information systems unit of Cincinnati Bell, Inc. in Cincinnati. "One of the things [I like best] is that any operating system can interoperate with it, including Novell NetWare, Windows NT and Windows 95."

"As far as administration goes, it is probably the easiest network operating system I've used," said Jason Jeremias, LAN administrator at Baughman Group, Atlantic-based of a Big Six accounting firm.

"It's so easy to install, it will practically take you by the hand and say, 'Go to lunch, and I'll take care of this,'" said Bill Howey, a senior systems consultant at AVCO Financial Services Corp.

OS/2 Warp Server, which among other features combines OS/2 Warp with LAN Server [CW, Aug. 21], will ship next week, IBM officials said. Included with the package will be systems management utilities, backup and recovery systems, remote communications facilities and enhanced TCP/IP support.

Computerworld names top editors

FRAMINGHAM, MASS.

Veteran editor Paul Gillin has been named to the top editorial spot at Computerworld, effective immediately.

Gillin, 38, joined the paper as executive editor in December 1986. He succeeds outgoing editor Bill Laberis, who is leaving after nine years in that post to start his own media consulting and custom publishing firm. Bill Laberis Associates, Inc. in Sudbury, Mass.

Gillin's elevation paves the way for two other internal promotions. News editor Maryfran Johnson succeeds Gillin as executive editor, and national news editor Patricia Keefe will take over as news editor.

"After having dedicated so much of my professional life to this paper, it is a great comfort to know that I leave Computerworld in such capable hands," Laberis said. "Paul and Maryfran and Pat will unquestionably carry on the 29-year Computerworld tradition of un-

matched dedication to serving the IS professional."

Gillin has written about computers for 14 years. He is a frequent speaker at industry conferences and on college campuses. In his new post, he will be responsible for all operation involving Computerworld's 70-person editorial staff, focusing particularly on strategy and long-term planning. Prior to joining Computerworld, Gillin was executive editor of Digital Review, a senior editor at PC Week and a senior editor at Computerworld. He has a bachelor's degree in journalism from Boston University and lives in the Boston area with his wife and two children.

A journalist since 1978, Johnson racked up extensive reporting experience at daily newspapers in Florida, Washington state and Ohio. She joined Com-

puterworld in 1989 as a senior writer, covering midrange systems and Digital Equipment Corp. She was promoted to an associate news editor over the Unix and open systems beat.

Johnson, 37, holds two bachelor's degrees — one in journalism and one in French literature — and a master's degree in journalism from Ohio State University. She has two daughters and lives in the Boston area with her husband and graciously puts up with his three dogs.

Keefe joined the Computerworld copy desk in 1981 and lat-

er moved on to the reporting staff. Previously, she was assistant news editor for two years at the Concord Journal. Before she became Computerworld's assistant news editor in 1992, Keefe gained a reputation as one of the industry's top networking and desktop reporters. She broke many stories about top-tier vendors such as Microsoft Corp., Novell, Inc. and 3Com Corp.

During her tenure as assistant news editor,

Computerworld was two Computer Press Awards for best newspaper. An news editor, she will oversee a staff of more than two dozen reporters and editorial and organize Computerworld's weekly news coverage. Keefe, 38, will work closely with "Computerworld," the firm's on-line news effort. She attended Michigan State University and the University of Massachusetts at Amherst, majoring in Russian and mass communications. She lives with her family in the Boston area and gardens extensively.

Computerworld editor Paul Gillin

Executive editor Maryfran Johnson

News editor Patricia Keefe

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Has It Changed Your Life Yet?

Expos expose growing role of Internet E-mail

Banyan, CommTouch among those displaying tools

By Tim Ouellette

The focus at the triconference of Internet Expo, Web World and E-mail World this week in San Jose, Calif. will be a bevy of products that are aimed at improving Internet mail capabilities.

Keynote speaker Eric Goldstein, vice president and chief scientist at the Open Software Foundation, will talk about using the World Wide Web as a foundation for groupware and enterprise computing. Most speeches at the show will deal with the Internet in one way or another, including a presentation by John Perry Barlow, co-founder of the Electronic Frontier Foundation. Barlow will discuss how the Internet affects the privacy and security of on-line users.

Parts of the Internet, including the Web, are experiencing huge growth, but a recent study by Matrix Information Directory Services in Austin, Texas, found that electronic-mail communications is the most popular Internet tool. And as users turn to the Web more for business use, E-mail most often is the first line of communication.

On the podium

Product announcements and highlights will include the following:

■ **Banyan Systems, Inc.'s** Coordinate.com Internet division will announce Switchboard, a free Internet directory of publicly available E-mail addresses, mailing addresses and telephone numbers that is based on Banyan's StreetTalk directory technology.

The Burlington, Mass. division also will preview BeyondMail Personal Edition, a slimmed-down Internet E-mail package.

■ **CommTouch Software, Inc.** in San Mateo, Calif. will announce Pronto 96, a TCP/IP mail client that lets users record and transmit voice messages over the Internet by sending a .WAV file as an E-mail Multipurpose Internet Mail Extension (MIME) attachment. Pronto 96 will recognize Web addresses and automatically launch a Web browser. It costs $89.

■ **Innosoft International, Inc.** in West Covina, Calif. will preview PMDF-X.500 for **Digital Equipment Corp.'s** Unix. The product will let users browse the X.500 directory from a Web browser and automatically send messages to another user's E-mail address. PMDF-X.500 uses MIME as an intermediary format to convert E-mail messages among different E-mail systems.

■ **INSO Corp.** in Boston will introduce CyberSpell, a spell-checking add-on to **Netscape Communications Corp.'s** Navigator Web browser. CyberSpell recognizes Internet-specific terms and addresses. It examines a sentence for context and shows up as a button when it writes E-mail messages in Navigator. It costs $24.

■ **SoftArc, Inc.** will announce FirstClass 3.5. E-mail and groupware that includes developer tools to add conferencing whiteboards, voice, videoconferencing modules or Web browsing to FirstClass. FirstClass 3.5 costs $495 for the server and five user licenses.

■ **Control Data Systems, Inc.** in Arden Hills, Minn. will use CheckPoint Software Technologies, Inc.'s FireWall-1 Internet mail security software to develop Control Data's integrated mail systems.

■ **IBM Corp.** will let users of its Global Network download free versions of **Qualcomm's** Eudora Internet E-mail software.

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OLTP PERFORMANCE   PRICE/PERFORMANCE

DEC firms up platform, Internet strategy

By Michael Goldberg
ORLANDO, FLA.

After years of switching gears on technology, products and sales strategies, Digital Equipment Corp. took the pledge last week — on a consistent strategy, that is.

The company committed itself to a pair of hardware platforms — Intel and Alpha — three operating systems — Digital Unix, Windows NT and OpenVMS — and a new Internet-centric software business.

A c, a conference here for 750 resellers, systems integrators and software vendors,

Digital pounded on the theme that its recent financial turnaround owed much to its indirect channels.

The vendor also pledged to show its gratitude by delivering more sales leads and fewer price changes to its business partners.

In the past two quarters, 57% of the Digital computers sold went through indirect channels, the company said.

"In the past, we've been successful with Hewlett-Packard and Sun Microsystems, but more people are asking about Digital," said Jeffrey J. Studley, an account manager at Workgroup Solutions in Burlington, Mass. "Alpha tweaks everyone's interest, especially in database applications."

On the client/server front, Digital's OpenVMS-Windows NT affinity program is proving a boon for customers, said David B. Schmidt, corporate vice president at Management Science Associates, Inc. in Pittsburgh. Digital offers different application development tool sets for OpenVMS and Windows NT environments but allows systems that run on two operating systems to communicate.

That helps VMS users migrate to new applications on NT, Schmidt said.

To improve the performance of its 64-bit AlphaServers and Digital Unix operating system, the company will offer clustering technology for commercial systems that run Oracle Corp. database systems. That is expected within three months.

This technology will improve reliability for two servers set up to mirror each other's data, said Enrico Pesatori, vice president and general manager of Digital's Computer Systems Division.

Digital also will crank up the clock speed on the Alpha microprocessors every six months or so, Pesatori said. In an effort to stay ahead of other vendors. The highest-performing chips — now 350 MHz — will go in the AlphaServer 8400 or Turbolaser.

At the same time, Pesatori said, Digital will still make PCs and servers that use Intel Corp. processors, including the P7 Intel is developing with HP.

"We're not going to artificially limit our product offerings and strategy around Intel because of our Alpha [chips]," he said.

VP Enrico Pesatori says Digital will crank up the clock speed on its Alpha microprocessors to remain ahead in speed wars with rivals

A few thoughts about motivation and UNIFACE
application-building strongware from Jim Rutherford,
President General Manager, Hartford Whalers

Nobody
beats the W

COMPUWARE

"Frankly I don't know squat about computers or software or any of that client/server stuff, but I do know the guys in the front office swear by our UNIFACE strongware and say it's the meanest dog around for building client/server systems, and we built, mad systems. But, hey, if you'd like to talk to someone with a little more expertise about the advantages of just call Compuware at 800-365-3608 or let me put you in touch with a certain 64,230-pound deliveryman of ours. He has a definite knack for moving people in the right direction. And motivator that guy."

For a T-shirt like Jimmy's and a UNIFACE brochure, or if you'd like to join our growing list of VARs, fax your business card to 906-737-7766. The 606 area code is on the web at BigNews. compuware.com Window.

UNIFACE

UNIFACE APPLICATION DEVELOPMENT STRONGWARE   WHAT THE BIG GUYS USE

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Welcome to COMPUTERWORLD's TechnoTrivia

It's fun – and easy to play each week!

1. Look for the COMPUTERWORLD TechnoTrivia icon to find the answers planted throughout this issue to the TechnoTrivia questions listed on this page.

2. Enter via COMPUTERWORLD's Web site on the Internet: **http://www.computerworld.com**.

3. On the Web site Entry Form, identify the page number in this week's issue of COMPUTERWORLD where the correct answer to each TechnoTrivia question appears.

4. Or you may enter by fax using the Fax Entry Form below.

This Week's Questions:

1. What kind of shirt is Lotus founder Mitch Kapor fond of wearing?

2. Who made the first laptop computer to fly on the space shuttle?

3. In what medium did Bill Gates' first BASIC interpreter for the Altair appear?

4. In 1994, what was the annual cost for generating all the electrical power to run all the world's PCs?

5. What game was played by the computer in the movie *War Games*?

Briefs questions and answers provided and/or invented by Christopher Morgan and The Technical Resource Connection

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A LOADED LAPTOP...AND
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Please pass along this issue of COMPUTERWORLD to an associate after you have finished playing the game.

The secret struggle

By Gary H. Anthes

Defense Department, corporate users at odds about how to secure, protect key data

Curious to test the security limits of a system connected to the Internet, Pentagon officials attached an access monitor to too last year and watched.

To their amazement, they saw hackers attack the system 4,500 times in three months. That's about 50 times a day.

"At another system, administrators stumbled on to what they thought was a high school student-hacker playing around," said Edward Hart, who at the time was head of information security at the National Security Agency. "A monitor was put on, and there were hackers from 14 different countries attacking the system."

Realizing it is the computer underground's target of choice, the Defense Department is rolling out stringent measures to protect its information assets.

Unfortunately, its disagreements with corporate America about encryption standards could retard the growth of electronic commerce and put commercial systems at risk.

"We need to pick something, and get on with it," Hart said. "U.S. industry cannot afford to wait any longer." Hart, who is now a security specialist at Science Applications International Corp. in McLean, Va., challenged industry to pick a set of commercial encryption standards and demand that the government integrate them with its encryption techniques.

Key-escrow debate

At the heart of the dispute is the struggle between the government's hardware-based "key escrow" encryption and commercial software-based encryption technology that would let users encrypt and decrypt data without anyone else having access to the key. The government prefers escrow systems, which require encryption keys to be escrowed or stashed with a third party (i.e., Uncle Sam).

Civilian agencies and the commercial world dislike and distrust the key escrow systems, which require encryption keys to be escrowed or stashed with a third party (i.e., Uncle Sam).

For example, the U.S. Department of Defense has chosen the Fortezza PCMCIA card to protect the 2 million users of its new Defense Message System. The cards use key escrow and the controversial, secret Skipjack encryption algorithm.

The off-the-shelf Pentagon likes the cards because they are tamper-proof. But the commercial world prefers cheaper and easier-to-use software alternatives.

"The government seems incapable of listening to what the market is saying it wants," said Lynn McNulty, president of McNulty and Associates in McLean, Va. He should know. Until recently, McNulty presided over the government's key-escrow encryption initiative at the National Institute of Standards and Technology.

Most commercial users have adopted encryption technology from RSA Data Security, Inc. in Redwood City, Calif., as their standard. "RSA is the software answer that the real world is going to," said John Pescatore, research director for information security at IDC Government in Falls Church, Va.

Commercial users — such as the 350,000 defense contractors that might want to use the Defense Message System — balk at two cost issues as well. The Fortezza cards cost $69 each, and all the PCs in their shops would need to be upgraded for PCMCIA capability. Pescatore said fewer than 4% of desktop PCs are shipped PCMCIA-ready.

Hit for civilians

The upgrade cost of Fortezza also is a problem for the civilian side of government. "As a result, civil agencies have essentially made no progress in secure E-mail or secure commerce," Pescatore said.

A company or agency that adopts the government's approach can integrate Fortezza with the mass market encryption software it already uses or maintain two systems — one for the government and one for everyone else, said Raymond B. Bowing, vice president for issues advocacy at the Society for Information Management.

All this leaves commercial users who want to do business with the feds stuck. These users can avoid electronic data interchange entirely, take a chance and send information unencrypted. Or they can pay more for government-approved cryptography. "It's unreasonable for government to expect everybody to invest in its solution," a senior Pentagon official acknowledged.

But officially, Uncle Sam seems to have a different opinion. The Pentagon is about to overhaul its employee travel system, which disburses some $3.5 billion annually. At a briefing last month, Defense officials told would-be bidders that the new system must use Fortezza cards — or a government-developed software equivalent — for communication among travelers and travel service providers. "They are trying to drive the whole travel industry into adopting the Fortezza card," McNulty said.

"Government clearly does not want Fortezza to be interoperable with non-escrow encryption," said Fred Mailman, regulatory manager at Hewlett-Packard Co. "That's a very contentious issue with industry, because we need interoperability."

The last time the government tried to strong-arm the adoption of a technology was in 1990, when it mandated the Ada programming language for all defense systems. Vendors and users resisted it, and the private section never embraced it, Bowing said. "This sounds like Ada all over again," he said. "It's another example of the Defense Department's feeling that it can establish a de facto standard. Private industry has convinced me about that."

Uncle Sam has three-tier scheme for data security

The government has developed the following three-tier scheme for data security which is attracting its share of controversy and critics:

• **Tier 1** — the most highly classified secrets, such as nuclear codes, that are vital to national defense.

• **Tier 2** — data at lower military classification levels and sensitive but unclassified information, such as air traffic control data and commercial banking transactions.

• **Tier 3** — information which isn't of national importance but which requires privacy, such as personal electronic mail. Tier 1 and Tier 2 applications must be protected by hardware, such as Fortezza PCMCIA cards, government officials said. But software-based encryption is adequate for Tier 3, which is where the commercial world principally operates.

One problem with this scheme is that the government's hardware-based encryption at Tier 2 doesn't interoperate with the private sector's Tier 3 systems.

A possible work-around is for the government to add to its Tier 2 devices whatever encryption methods the commercial world has adopted as the standard for Tier 3. "The motivation would be so people in the government with Fortezza cards could talk to people in industry without the cards," explained Stephen T. Kent, chief scientist for security technology at BBN Corp. in Cambridge, Mass.

But the notion of dividing whole classes of data and applications into neat tiers is overly simplistic and naive, said Paul A. Strassmann, former director of defense information at the Pentagon.

What businesses must do instead is undertake rigorous "failure analyses" to determine how each of their systems is vulnerable and what security breaches would cost, Strassmann said.

With that information, a firm can take the necessary protective action.

Sometimes that protection is as simple as placing a firewall between the Internet and corporate systems to block access by hackers.

"Over 90% of penetrations have nothing to do with technology," Strassmann said:

"They are just the result of management negligence."

— *Gary H. Anthes*

Paul A. Strassmann — *Negligence, not technology, is responsible for more than 90% of security breaches*

hi h
hi h

Computer Industry

Glut of memory chips pushes prices down

By Jaikumar Vijayan and Stewart Deck

So far it hasn't been a great year for building memories.

Make that memory chips. A mounting glut of memory supplies and falling demand for some older designs have caused prices on some memory chips to slide 20% to 40% in the past several months. This is the first such slide since 1993.

The oversupply and resulting price cuts pertain mainly to the lowered 4M-bit memory chips, or so-called fast-page-mode chips, that have been widely used by PC makers. However, those chips are slowly being phased out in favor of new and higher-end memory designs, such as extended data out (EDO) memory. Despite the

glut of the fast-page-mode chips, the supply of EDO memory chips is constrained.

For users, the falling prices could trigger some marginal price cuts at the system level around April. However, some analysts say the upgrade market will feel a more significant impact.

"The deals [from the price drops] will occur in memory upgrades because 20% to 25% of the DRAM supply goes into upgrading," said Sherry Garber, an analyst at Semico Research Corp. in Phoenix.

Years of stability

Memory prices overall are dropping after nearly three years of unprecedented stability. Meanwhile, prices of other components such as microprocessors

and hard drives have gone down steadily in that same period.

Analysts attribute the stability of the memory chip market to strong sales of PCs in the home and small-business markets and the growing demand for fast-page-mode memory chips from the video game and communications markets.

But a massive increase in memory manufacturing capacity resulted in a flood of chips. And new demand from the consumer market shows signs of softening.

Since November, when memory chips first started their downward spiral, prices have slumped anywhere from 20% to 40%. For instance, 4M-bit, fast-page-mode memory, which used to sell for around $12, now sells for about $8 in the open market, said David

Wu, an analyst at The Chicago Corp. in New York. Eight of these chips are used in every 4M-byte memory module, which means a price drop of at least $32 on every 4M-byte memory module.

Analysts expect U.S. memory manufacturers such as Micron Technologies, Inc. and Texas Instruments, Inc. and Asian giants such as Samsung Ltd., NEC Corp., Hitachi Ltd. and Toshiba Corp. to

drop prices even more over the next quarter or two on fast-page-mode chips.

"This is a temporary glut. Prices may go down by another 3% or so but then will start firming up. But they will certainly not go back to the levels [where] they were" before the present slump, said Linley Gwennap, editor of the "Microprocessor Report" in Sebastopol, Calif.

Chipping away

Average worldwide quarterly prices for 4M-bit dynamic RAM*

$12.18 ... $11.75

Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4
        1995   1996**

*Open market prices at low point
**Projected

Source: Semico Research Corp., Phoenix

Start-up pitches on-line catalogs for dummies

By Mitch Wagner

It's becoming a common story: A few people with some technical skills and a dream get together to start a company but dump business on the Internet, hoping to make a billion dollars.

The latest to enter the Internet derby is Viaweb, Inc. in Cambridge, Mass. Last week it launched a service designed to help merchants quickly build catalogs on the Internet without leaving a stitch about World Wide Web technologies. The merchants don't even need to own any Web server software.

"We believe on-line shopping will be a compelling application," said Viaweb President Paul Graham. "You can log on the Web 24

hours a day, and you can put more stuff on the Web than you can in a catalog and do it cheaper and easier than printing and mailing a catalog. But merchants don't want to have to become Internet experts."

Graham said he hopes that instead of becoming Internet gurus, merchants will subscribe to the Viaweb service for $100 to $300 per month and log in to the Viaweb site on the Internet using a Web browser. The company recommends Netscape Communications Corp.'s Navigator, although any Web browser will do.

Merchants fill out forms on-line giving the text of product descriptions and pricing and uploading product photographs. The Viaweb software loads the text and images into preprogrammed templates and posts the information to the Web. The result is an on-line catalog. The catalog is hosted on a Pentium PC running BSDI

Unix in Viaweb's corporate headquarters, with a T1 connection out to the Internet.

The Viaweb staff is the typical eclectic bunch for an Internet start-up. Viaweb was formed last summer by six faculty members and students at the computer science graduate school at Harvard University. None of them, except Graham, has a title, and the only reason Graham has one is that Massachusetts law requires that all corporations have a president.

Graham is the author of computer technical manuals on the Lisp programming language and worked as a consultant at Du Pont Co. and the U.S. Department of Energy. Another founder, Julian Weber, is a New York attorney with an extensive business background. He was president of The National Lampoon from 1979 to 1984, during which time it produced the movies Animal House and National Lampoon's Vacation.

The company's biggest celebrity, however, is Robert Morris, a Ph.D. candidate in computer science at Harvard who was convicted of computer crime for releasing a "worm" program that brought the Internet to its knees in 1988 (see story below).

Viaweb will face stiff competition. Microsoft Corp. last week announced a design tool for building commerce applications on the Web. And hundreds of firms have sprung up nationwide, offering to build and host Web sites.

Viaweb's Robert Morris was once convicted of releasing a 'worm' program

$8.5 billion

'net worm creator turns entrepreneur

Would you hire an on-line commerce consultant who is one of the founders of Viaweb might be asking themselves.

Robert Morris is one of the six founders of Viaweb. In 1988, he set loose a "worm," a software program that brought the Internet to its knees. In 1990, Morris was convicted of computer crime and sentenced to three years of probation, 400

hours of community service and forced to pay a $10,000 fine.

Of course, Morris isn't your typical computer criminal. Even the people who prosecuted him speak highly of him. They say he lacked a criminal mentality or criminal intent; he simply performed an ill-advised experiment that went wrong.

"He intended to write a worm. He intended to break in. But he didn't intend to cause

damage," Mark Rasch said. Rasch was a trial attorney with the U.S. Justice Department and led the prosecution against Morris. Rasch is now a corporate attorney.

Paul Graham, president of Viaweb, spoke highly of Morris' personal integrity and trustworthiness. "Robert Morris is the way you'd want your kids to turn out," he said.

— Mitch Wagner

Building Next Generation Distributed Applications

Oracle Corp.'s Distributed Initiative

Oracle's Distributed Initiative

So far, there have been four stages of distributed computing: host-based processing, client/server computing, partitioned client/server computing, and distributed components. Client/server computing, the application development rage of the 1990s, lies on the continuum of an underlying application design concept known as distributed computing.

Prior to the 1990s, the term "distributed computing" implied many users sharing the same application resources. During this time, most applications were ultimately executed on like hosts over like networks and was presented on simple terminals. In this first phase of distributed computing, application development tools consisted of classic edit/compile/debug 3GLs and legacy 4GLs.

In the early 1990s, the growing popularity of PCs and LANs, combined with the GUI vogue, engendered a critical transformation in distributed computing. For the first time, the host server abdicated control over application processing. The initial client/server designs, often called "fat client" solutions, moved most application processing to the client. The server not only lost dominion over the presentation aspects of the application, but forfeited the processing of the business logic as well. In short, the server was relegated to the role of data host, and we progressed from dumb client to dumb server in this second phase of distributed computing.

As the use of client/server evolved from simple deci-

sion support applications with few users to mission-critical systems with larger user communities, the fat client methodology hit the "wall of scalability." Client/server tools could not handle all the requirements for performance or the added complexity. The solutions were 1) to move segments of application logic to the underutilized dumb server for execution, or 2) add middleware to abstract heterogeneity of network, operating environment and data access from the developer. These applications reflect the third phase of distributed computing.

The great leap forward

> ...the use of
> client/server evolved
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> ...hit the "wall of scalability."

The great leap forward

The third phase of distributed computing introduces reuse of components and advanced networked computing. The development process is evolving rapidly, between object-oriented development tools fostering internal reuse, and software components propelling the adoption of reuse from the public domain. Component-based development concerns itself with identifying and populating applicable components that abstract all but the final delivered functions and features from the developer.

Most GUI building is already component-based. Vertical industry business logic can be purchased from industry-specific libraries or suites, then tuned for an application's needs. Technology-handling components eliminate the need for the developer to understand the underlying workings of multimedia, asynchronous communications, telephony, docu-

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White
Paper

ment management and even APIs.

In the near term, visual 3GLs and 4GLs will be used to glue components together into applications. Eventually, large components that act as agents for developing certain classes of applications will help developers through the entire development process.

Once this happens, developers will no longer have to worry about middleware, database, network, presentation and application logic or partitioning. Ultimately, components will enable developers to benefit from the experience of those pioneers who tackled the earlier challenges of distributed computing.

As applications grow increasingly complex, developers are demanding more distributed capabilities, higher levels of integration between databases, development tools and legacy data stores; and all of this across heterogeneous environments.

Oracle has invested significantly in distributed computing capabilities. Although Oracle products are often perceived as proprietary and closed from an architectural standpoint, this perception is not entirely well-founded.

In addition to the migration to a component-based paradigm, the corporate network will be extended to incorporate advanced network computing models, including the Internet, mass networked server deployments and mobile computing. As organizations investigate low-cost ways to improve both internal and external access to corporate information repositories, the client/server applications model will be extended beyond LAN and private-WAN-oriented network access.

This move to "virtual networks" will require RDBMS and tool suppliers to extend their client/server database architecture to incorporate Web and mobile networking. This migration to a larger "networked" computing model will require significant development efforts in order to link and insulate the intricacies of Web and wireless communications from the database and applications development process.

Scalable architecture

Operating environment scalability refers to a database architecture's ability to support a diverse set of operating environments and is a determinant of database utility.

The only vendor to provide operating environment scalability, Oracle does so by implementing the same kernel across all operating environments.

Distributed Applications & Solutions

Source: Oracle Corporation

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The logistics of using the same kernel across 16-, 32-, and 64-bit operating systems reflects the considerable effort put into Oracle7's design. The drawback to this approach is Oracle7's larger footprint on desktop systems. However, given the trends of more memory-intensive operating systems and applications, and falling memory prices, this concern will become less urgent.

The value in operating environment scalability is the guaranteed consistency, portability and integrity it provides in data management. The importance of consistency and integrity should not be underestimated, given the complex tasks of managing heterogeneous systems and resolving inconsistencies when implementing multiple database technologies (potentially from the same vendor).

Another facet of scalability is an engine's ability to support an expanding user community and more complex application processing requirements with linear performance. True size and performance scalability can be accomplished only through a database operating environment that supports a multithreaded architecture as well as symmetric multiprocessing (SMP), clusters and massively parallel processing (MPP). Oracle has worked closely with systems vendors such as Sun and has achieved truly linear performance across a Solaris-based SMP configuration with 20 processors.

Oracle7's thread management architecture affords multiple users concurrent access to an Oracle7 server. Parameters such as the number of dispatchers used to assign clients to a server as well as the manner in which threads are created or destroyed are tunable. Oracle's SMP solution scales easily and Oracle7 supports a variety of parallel operations. Servers can be added in an SMP configuration in realtime without shutting the system down. Oracle7 also manages its parallel processing capabilities automatically, avoiding continual administration to generate performance metrics to implement manual data partitioning decisions.

IDC believes that Oracle7's scalability, combined with its automated management of parallel operations, will prove compelling to developers who want a high-performance solution without the constant tuning that typically accompanies such products.

In addition, Oracle recently introduced its In-

teroffice product suites, designed to further facilitate mass server deployment in "branch automation" scenarios, integrating data management with other services such as Internet and groupware technologies.

Distributed data and replication

The concept of distributed databases has existed at Oracle for years, but the technology necessary to manage transparent updates arrived with Oracle7. The goal of implementing a distributed database is the same as for a component-based distributed application: to optimize resource utilization. Resource optimization is a function of distributing application workloads across operating environments and networks to maximize throughput and minimize cost. Despite the challenges that persist in managing a distributed database environment, Oracle has automated the key operations to ensure data integrity and to simplify application development.

> The scalability of Oracle7,
> combined with its high level of
> automation in managing parallel
> operations, will prove compelling
> to developers who want a high-performance
> solution without constant tuning.

> Oracle7 manages a distributed database environment via a global catalog that resides on every node. This gives every node processing autonomy but still facilitates a complete view of the entire environment. Updates to this catalog can be administered synchronously to ensure global catalog integrity.

Most mission-critical distributed databases rely on realtime or synchronous distributed updates. Most vendors, Oracle included, employ a two-phase commit protocol that ensures data consistency and integrity above all else. Distributed updates of this type can also be performed in a multi-vendor heterogeneous database environment by leveraging Oracle Transparent Gateways.

It is also possible to couple synchronous processing with triggers to effect realtime replication for transactions that require exact point-in-time consis-

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tency of all copies. For developers who need distributed database capabilities but who can relax certain constraints regarding consistency and latency, asynchronous data replication is a key enabling technology. The consistency and integrity of synchronous replication are desirable features of two-phase commit, but the overhead and availability requirements of synchronous processing are a serious drawback.

Most business functions do not demand realtime updates. Asynchronous data replication is usually more appropriate for addressing near-realtime updates, especially for organizations that intend to

Major Interoperability Requirements: The Role of Gateways and Access Managers

Source: Oracle Corporation and International Data Corporation, 1995

replicate data to and from large volumes of desktops and mobile devices. Consequently, asynchronous data replication is emerging as the preferred solution to most distributed database implementations.

Oracle's approach to asynchronous data replication uses triggers to generate replicates that are distributed to target sites using deferred RPCs. All of the asynchronous data replication administration functions are included in Oracle7. Oracle's scalable database architecture also ensures that replication is supported across all operating environments.

Oracle's asynchronous data replication implementation breaks new ground in several areas, including peer-to-peer replication and the use of deferred RPCs for delivering data replicates. Other replication solutions effectively support only parent-child or master-slave data replication. But

these more simplistic approaches cannot resolve update conflicts that occur when two sites attempt to simultaneously update a specific row of a database table. Oracle currently offers the most comprehensive peer-to-peer replication implementation, one that supports various pre-defined criteria for resolving update conflicts and even allows developers to write their own customized conflict resolution routines.

Oracle also uses deferred RPCs to deliver data replicates to target sites. Deferred RPCs and the queues that they foster are durable since they are protected by the backup and recovery mechanisms of the Oracle server. The queues are in fact Oracle tables. As a result, replicates cannot be lost and will be propagated to an off-line target system when it becomes available. However, SQL*Net remains a prerequisite for inter-database communication within the Oracle environment.

Gateways and access managers

Most corporate computing environments reflect a mix of vendor databases. Data management across a heterogeneous and multi-vendor environment demands methods to integrate these disparate data sources. As a result, database vendors must provide some measure of interoperability and integration across a multi-vendor database environment.

Database vendors have responded with gateway technology, which creates an interface to a foreign database and resolves underlying semantic differences between the native and foreign databases. Most vendors are now capable of seamless and transparent bi-directional communication across the RDBMS community coordinated through the dialect of the native database.

Oracle has been criticized for not building gateways to the engines of other database vendors. But the company has adopted a more realistic outlook. In fact, some of Oracle's Transparent Gateways are now benchmark products by which others will be judged.

Figure 2 lists the interoperability requirements that Oracle faces in today's market for development tools. To access legacy tool and database environments, Oracle employs gateways. Legacy tool access to Oracle data is performed through Oracle Access Managers, which function like reverse gateways.

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Oracle integrates data from non-Oracle databases primarily through its Transparent Gateways, which address the differences between SQL dialects. Features of Transparent Gateways include datatype conversions, dynamic schema transparency, outer joins and outbound support for PL/SQL services such as triggers, stored procedures and user-defined functions (UDFs).

Oracle Transparent Gateways can also be installed on a platform other than the one on which the target data store resides. Although Oracle supports access to more than 30 different data stores, access to some of them is achieved via a version of EDA/SQL and is read-only. Transparent Gateways are suggested for use in ad hoc query and decision support applications, as well as those involving moderate OLTP.

For high-performance applications, Oracle offers a procedural gateway for APPC that can interface with a mainframe TP monitor and enable Oracle applications to front-end existing OLTP systems. The Oracle Procedural Gateway maps an external procedure call (EPC) to any APPC-capable system, including CICS, IMS/TM and IDMS/DC. No incremental programming is required on the host system. Utilities are provided to generate the PL/SQL code which maps the application request to the EPC.

Oracle has also developed the concept of access managers to ease the transition of data from mainframe systems to Oracle. An access manager ensures that legacy applications that utilize transaction managers can continue to access data, regardless of where it physically resides. Because the migration of mission-critical systems is often a lengthy affair, access managers are a solid concept.

In early 1996, Oracle will offer support for automatic, asynchronous replication within an environment of multiple database vendors. This new Replication Services product will provide GUI-based administration facilities to define and maintain an asynchronous replication environment between non-Oracle data sources and Oracle.

Distributed systems management

Managing a handful of additional servers may not be an unreasonable task. But the administration of hundreds or thousands of client-side devices will not be cost-effective unless a high level of automation is part of the solution.

To address this, Oracle released a series of products in late 1995 that provide software management in a distributed heterogeneous environment. Oracle's systems management product, Enterprise Manager, provides a foundation to ensure the manageability of the Oracle database for the enterprise. The Enterprise Manager family consists of systems management tools designed to manage the complete Oracle environment, including systems, databases, networks and applications.

Oracle Enterprise Manager is an integrated solution for managing a heterogeneous environment with an open client/server architecture. The scalable client/server architecture consists of a centralized console, common services and intelligent agents running on the managed nodes. The console provides a central point of control for an Oracle environment, with a tree-based navigator and map view simplifying many administration activities.

The common services provide a job scheduling system and an event management system, with the agent residing on the database server to execute the necessary jobs and events. Open APIs for both customer and third-party integration are available at both the console and agent levels, with complete SNMP enablement for integration with the major network management platforms.

Running on top of the console are standard DBA applications for user and group administration (including Oracle Software Manager, a workgroup systems management product for complete software distribution), as well as performance tuning, monitoring and diagnostic tools known as the Oracle Enterprise Manager Performance Pack. The console, agent, common services and standard DBA applications are included with the purchase of the Oracle Enterprise or Workgroup Server Version 7.3. The Oracle Enter-

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prise Manager Performance Pack is an option.

Oracle Software Manager performs the functions of software distribution, software asset management, license management, and remote server configuration and management by employing the use of intelligent agents and a distributed job scheduling capability. An agent — a remotely controllable event processor — can be instructed to perform many of the same tasks usually done by an administrator. These agents can operate in both synchronous and asynchronous modes and can operate in realtime, near realtime, or on a scheduled basis.

A store-and-forward architecture is also employed between the console and the agent so that any directives or notifications unable to be delivered due to a network or system outage will be queued for later delivery. Although software distribution is one of Oracle Software Manager's key capabilities, both software asset management and license management are derivative features which collect, monitor, and report software utilization metrics.

The product's remote server management agents will facilitate a "lights out" database operation. This feature is particularly important for geographically dispersed workgroup servers that need ongoing management. Remote controlled tasks include database startup and shutdown, backup and recovery, import/export, load, tablespace management, performance monitoring, server configuration and control, and database schema/object management.

Oracle Replication Manager, which can be launched as an applet from Oracle Enterprise Manager, is a graphical tool that lets users configure, schedule and administer their replicated environment from one location. Its point-and-click interface lets users define groups of database objects that need to be replicated and managed as a unit. These objects can include not only tables but also their supporting objects, such as indexes, triggers, views and conflict resolution procedures.

After creating a group, users can drag and drop it onto other databases to add new replication sites to their environment. If objects are added or removed from a replication group, the changes are deployed at every site.

Connectivity products

SQL*Net is SQL-based middleware that has existed in various incarnations since 1988. The product provides connectivity between Oracle databases and Oracle tools or applications. SQL*Net abstracts various network protocols and operating system interfaces, creating transparent connectivity between Oracle products and applications.

SQL*Net also supports any number of protocols simultaneously through the MultiProtocol Interchange, which provides transparent protocol bridging for a single connection. This eliminates the need to standardize on a single protocol.

To facilitate the task of configuring a SQL*Net network, Oracle provides with SQL*Net a graphical configuration utility called Oracle Network Manager. This utility offers a walk-through configuration process and enables users to build their network definition simply by selecting icons from the tool bar and dragging and dropping them on a network map. The utility validates the user's definition for completeness and generates all necessary configuration files.

To further simplify the administration of SQL*Net, Oracle provides a directory service called Oracle Names. This stores service names in a central location so when changes are made to the underlying network definition, they need be made only once and are instantly recognized through the entire network. Oracle also supports other industry directory services, including Banyan StreetTalk, Novell Netware Directory Services (NDS), OSF DCE Cell Directory Service (CDS) and Sun NIS/Yellow Pages, to provide service resolution in the Oracle environment.

SQL*Net's diagnostic logging and tracing capabilities help distinguish it from other industry middleware. SQL*Net comes with an administrative tool that enables the users to start, stop and interrogate the status of a component from anywhere in the network. SQL*Net also supports the Simple Network Management Protocol (SNMP), which enables administrators to monitor the Oracle7 server along with all SQL*Net components through SNMP-based

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management consoles such as HP OpenView, Sun Solstice or Netview/6000.

Oracle security

As the move toward distributed computing continues, more information will travel over the wires between devices, much of it critical or sensitive. Measures will need to be taken to ensure confidentiality and security. The main challenge of these distributed environments is to address requirements for confidentiality, data integrity and authentication. Oracle Advanced Networking Option is a database option that provides network security capabilities.

Oracle's Advanced Networking Option ensures data confidentiality through software-based encryption algorithms, including RC4, DES and DES40 (a 40-bit DES version). Advanced Networking Option uses cryptographic check sums based on the MD5 algorithm. It also provides authentication for Oracle7 servers which support third-party authentication products such as Kerberos, SESAME and smart cards for token authentication. Oracle, in its next release, will support for biometric devices because of their ease of use and stronger authentication potential.

Providing security across the network is critical to widescale distributed computing. Oracle's addressing all the key issues related to network security, combined with Oracle7's NCSC B1 and C2 ratings as well as its ITSEC E3 rating, makes for a highly secure distributed data management environment.

Oracle's WebSystem

The World Wide Web offers many opportunities to vendors: access to global markets, an ability to extend existing products and services, and a market for entirely new classes of products and services.

Today's read-only information access focus of the Web will quickly give way to read/write commerce-oriented activities with additional requirements for transaction processing, security and the development of complex Web-centric applications.

At the core of most Web applications is the need to manage information. The center of gravity for Oracle's WebSystem product is information management and the delivery of tools, solutions and services to manage information in a reliable, scalable

and open environment. Oracle currently offers three Web-related products: the WebServer option, the WebServer and the PowerBrowser.

The WebServer option provides Web connectivity for existing Oracle7 enterprise servers through the use of agent/listener technology. The listener listens for Web-based connections and supports any browser that uses the standard HTTP protocol. Oracle's agent technology provides access to Oracle7 from a Web interface. A toolkit provided with the WebServer option lets developers encapsulate and generate HTML instructions using PL/SQL.

Oracle's WebServer combines the WebServer option with an Oracle7 workgroup server. It is a packaged solution for workgroups that want to establish a dedicated Web server.

PowerBrowser is client software for browsing and building simple Web applications. It includes:

• Oracle BASIC engine, an HTML 2.0 compliant scripting engine (borrowed from PowerObjects) for building simple applications.

• Personal Oracle Lite, a standalone personal database designed for mobile deployment, managing personal Web access, saving URL data and navigating the Web.

• Personal Publisher, a Wysiwyg page layout editor that helps users create their own Web pages (without having to know HTML).

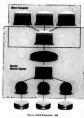odds the read-only information ... access focus of the Web will quickly give way to read/write commerce-oriented activities with additional requirements for transaction processing and security.

• Personal Server, which allows peer-to-peer document sharing in a workgroup environment.

• Network Loadable Objects, an interface that allows new document types and applications to be displayed and executed within the browser.

Building complex Web applications is still beyond the scope of today's Web-based development environments. But with its WebSystem products, Oracle

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BUILDING NEXT GENERATION DISTRIBUTED APPLICATIONS

White Paper

Oracle Mobile Agent Components

Source: Oracle Corporation 1995

has gotten a jump on its competitors. By announcing that it will Web-enable Developer and Designer/2000 in early 1996, Oracle is rapidly moving to support serious application development.

Oracle has also licensed Java and will incorporate it into its browser. Although Oracle has taken a lead with its WebSystem products, many of its competitors have yet to drive a stake in the ground.

Oracle Mobile Agents

The rapidly growing mobile computing market presents unique challenges to tool vendors. This market is characterized by low bandwidth, low speed (high latency), multiple proprietary communication protocols and high cost, obstacles that make interfacing the mobile market with corporate networks and client/server applications a daunting challenge.

Oracle's Mobile Agents solution reflects a combination of agent and messaging technologies. Mobile Agents provide transparent interoperability between mobile and LAN-based operating environments. Oracle will position Mobile Agents as a connectivity product, independent of SQL*Net. (SQL-based connectivity products are overhead-intensive.).

The components of the Mobile Agent system support the discontinuous and occasionally connected nature of mobile clients by leveraging server-side agents to collect information on the client's behalf for bundled delivery to the client during the next session. These agents collect and disseminate information by means of event managers and custom transaction handlers. This information is queued as messages in a gateway that sends and/or receives messages from the mobile client and manages system security through password encryption and message authentication. A message manager residing on the mobile client delivers messages to the appropriate client-side application. Figure 3 shows the key components of the Mobile Agent product.

As the mobile computing market matures, Oracle expects a shift to lighter weight clients (relative to today's laptops). Next-generation personal communicators and cellular phones will have enhanced messaging and data management capabilities. Consequently, Oracle is focusing on specialized applications for several vertical markets and various asynchronous processing models for these more simplistic devices. The next release of Mobile Agents will have better data synchronization capabilities as well as more intelligent agents.

Distributed computing features

Oracle's development tool strategy revolves around Power Objects at the personal and workgroup levels and Developer/2000 and Designer/2000 at the workgroup, department and enterprise levels.

In 1994, Oracle had licensing and maintenance revenues of $436 million for 4GL development tools, making it the largest vendor of 4GLs in the world, nearly 50% larger than its closest competitor. Oracle has also rapidly gained in the hotly contested Windows operating environment arena, where its revenues are close to $100 million.

Oracle's distributed computing approach for its development tools is an evolutionary one. The benefit of this approach is that Oracle delivers development tools that are highly intuitive and well-inte-

grated, and spans key aspects of the development lifecycle with bidirectional support for design and development features. As a result, Oracle technology addresses real-world problems without extracting a high price in terms of training and education. Oracle is positioning its tools to compete in the mainstream application development market, where it excels compared to most other 4GLs.

Developer/2000

The success of Oracle's development and design tools confirms that developers prefer to seek tools with tight database integration. Oracle database developers are predisposed to Oracle development and design tools as long as they are competitive.

PL/SQL is the underlying scripting language for Developer/2000 and its predecessors. PL/SQL is highly proprietary, yet provides tight integration, control and power for developing Oracle-centric applications. Oracle revenues suggest the advantages of PL/SQL outweigh any drawbacks, but in the near term, Developer/2000 will remain a sale leveraged by

Oracle databases. Release 1.2 of Developer/2000 provides an Open Client Adapter that contains drivers for virtually all leading RDBMSs (via ODBC), Tuxedo and DCE as well as links to Oracle Transparent Gateways. Fig. 4 shows the drivers and databases supported by Developer/2000 Open Client Adapter.

Developer/2000 gets mixed marks in scalability. Its strengths are development flexibility, support of complex application development (via application partitioning), reuse capabilities (through VBX3 and OLE 2.0), multi-vendor database support, team support and the beginnings of component development. But it lags in its simplistic GUI builder, aging usage metaphor, inability to construct database independent server-logic, generation of compiled code (not just p-code), and object-based development. Release 2.0, due in mid-year, will go a long way toward curing these ills. Given the rapid pace of development of Oracle tools, users should keep faith in Oracle's ability to keep supplying a highly competitive 4GL.

Despite the average marks that Developer/2000

FIGURE 4

Developer/2000 Open Client Adapter

			Developer/2000				
			Oracle Open Client Adapter				
Oracle7, Open Gateways	Rdb ODBC	Generic ODBC	Interactive DataDirect		Tuxedo	Open Horizon DCE Connection	Drivers included in Developer/2000
SQL*Net		MS Access	Informix Net, Ingres Net				Other required client software
Oracle7	Rdb	SQL Server	System III, SQL Server, Informix, Ingres		Tuxedo	Open Horizon Server	Server software
APPC	DB2 MVS	DB2 400	Rdb	DRDA	Sybase Informix Ingres		Oracle Open Gateways

Source: Oracle Corporation, 1996

BUILDING NEXT GENERATION DISTRIBUTED APPLICATIONS

White Paper

receives today, its ability to exploit the power of Oracle7 has helped to establish it as the leading 4GL.

Designer/2000

Designer/2000 is Oracle's response to demand for simpler design tools that provide CASE "lite" capabilities, which complement 4GL and RAD development. Windows-based Designer/2000 resides alongside Oracle's CASE* 5.x tools, which address Unix and VMS operating environments. However, Designer/2000 does share the same repository as Developer/2000 (and Oracle's CASE* 5.x tools) and is responsible for enabling much of the iterative forward and reverse engineering between the /2000 tools.

Designer/2000 consists of a process modeler, system modeler and system designer. System modeling and design is often viewed as a mere exercise in preparing for the "real" programming task. But the system generation and reverse engineering capabilities of Designer/2000, when linked to Developer/2000, will elevate the status of these preliminary development tasks. Designer/2000 now generates code for Developer/2000, Microsoft Visual Basic 3, Oracle7 and ANSI SQL (for foreign databases).

The automation Designer/2000 provides in constructing client/server systems is its best attribute. Although server-side code generator is database centric, Designer/2000 provides some transparent control over application partitioning by dragging and dropping icons. Designer/2000 also supports reverse engineering capabilities for Developer/2000 and other legacy applications written in Oracle Forms and Oracle Reports. Although synchronization issues between the logical models and physical code still exist, Oracle is one of the few vendors to provide complete, iterative life cycle development.

Because virtually all other DBMS vendors look to third parties for design tools, they typically lack the consistency and integration that is the hallmark of Oracle tools. The tight integration of Oracle design tools with Oracle7 and Developer/2000 will appeal to 4GL developers looking for added horsepower.

Enterprise development vision

Oracle's current-product suite projects an integrated solution as a result of leveraging a common programming language, carefully constructed external interfaces (APIs), and some common metadata management. What is missing from this architecture is a common infrastructure and more atomic basis for enabling application interoperation.

Oracle's next-generation product (code name Sedona) is based on object-oriented development techniques, providing Oracle an environment for the construction of atomic elements whose properties can be reused, transformed and inherited to drive the development of connectivity, database, design and development tools. These tools will all share the same architecture, giving users higher levels of consistency, interoperation and integration. Oracle's ability to communicate with external and legacy environments through encapsulation and other object-oriented tools will also be enhanced. Consequently, Sedona will deliver more power via a more intuitive and abstracted usage metaphor.

The Sedona vision will become reality over the next three years. Users will see the first signs of Sedona in release 2.0 of Developer/2000 and Designer/2000, vis-a-vis their use of class-level data models, object reuse and re-entrant wizards. IDC believes that Oracle's vision will reinforce its leadership position in the RDBMS and development tools markets.

Conclusion

· Oracle's lead in the programmer development tools market reflects its supremacy in database technology, an ability to deliver competitive design and development tools, wide-ranging life cycle coverage, and a clear objective to offer unparalleled integration within an Oracle-centric development environment. Oracle recognizes the importance of addressing distributed computing needs and is attempting to establish a lead in all four stages of the distributed computing continuum. Only by supporting all four stages will Oracle be able to offer support for legacy applications, provide competitive products with the capability to build today's complex applications, and provide a migratory path for users who wish to leverage the power and flexibility of newer tools and development techniques. □

BUILDING NEXT GENERATION DISTRIBUTED APPLICATIONS

White Paper

the gap between people and answers

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and use the data they nee_____ better busi____
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money. People have the capability to take _____ _____ by using Microsoft
Excel PivotTable® Wizard to see the nam__ _____ _____viewed by Microsoft
Access in a clear and dynamic way. And w_____ _____ Mail Merge Wizard,
users can combine data like names and _____ _____ments. They just select
the data to merge, the document to me_____ ____ ___ sets everything up to go.

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One last time

I am writing this from an airport in Tampa, Fla. They just announced another "indefinite delay" of my flight to Boston, where it is snowing. It is Valentine's Day, and I want to go home to my wife and boys. This is one part of my job I won't miss.

This is my final editorial. After 15 years at *Computerworld*, the last 9 1/2 as editor in chief, I am leaving to pursue the American Dream.

The management torch here has been passed to Paul Gillin, who for most of those 9 1/2 years has held the No. 2 editorial spot at *Computerworld*. He is every bit the reader advocate that I am, only he's much funnier. He's a Monty Python type who knows all of "Cheese Shop" by heart. He delivers great, insightful speeches and is the closest thing to a computer geek in our department.

I know he'll find that being the editor of *Computerworld* is about the best job in the world. It has taken me around the U.S. countless times and its 16 countries. I've delivered more than 100 keynote addresses and speeches to thousands of IS professionals, consultants and vendors. I've met and, in some cases, befriended people who have shaped this industry and our entire culture with their inventions and vision. I've met some real charlatans, too. Sorting out these types is part of what we do here.

But most of all, I've had the privilege of leading a phenomenally dedicated group of professional journalists in pursuit of excellence and the truth. In an environment supersaturated with hype, we've always tried to cut through the bull. And we remain the only weekly IS publication that readers are still willing to pay for.

Now I'm off in my own business. Bill Laberis Associates (this is the free ad I've earned after 15 years). My company's mission is to help computer companies, among others, achieve order-of-magnitude improvements in their written communications with their customers. We'll do this with a combination of media consulting and custom and contract publishing services.

As of March 1, you can reach me at bill@laberis.com or at laberis@aol.com. My office phone then will be (508) 429-4262. We can work wonders for those for whom publishing might not be a core competency.

So much for good-byes and my free ad. I leave you with the words of Bobby Kennedy, words I've used in managing both my professional and private affairs, words that you might use far more than anything I've written in 600 previous editorials.

"This is a great nation and a strong people. Any who seek to comfort rather than speak plainly, reassure rather than instruct, promise satisfaction rather than reveal frustration — they deceive and they graatness and drain that strength. For today, as it was in the beginning, it is the truth that makes us free."

Bill Laberis

Bill Laberis, Editor

SAY, YOU LOOK PRETTY CONFIDENT.

One for the little guys

Regarding "IBM reprices 'net access costs to lure users" [CW, Jan. 15], every Fortune 100 high-tech publication graces dreams of scaring the public away from the Internet entrepreneurs who force them to actually compete. So, it is both creepy and appalling that you shield gush about IBM's ersatz "low-cost access" as "a comfort to users [who are] wary of relying on small Internet access providers."

The Internet harbors the innovative small business as well as anything in our nation's history. In the middle of all this, small Internet access providers have combinations of bandwidth, service, reliability, value and customer loyalty the big guys still can't figure out. That's an intriguing story. But you help circulate doubts aimed at collapsing a very blessed state of open competition.

Tom Iglehart
Ergon Group
Brookline, Mass

Adding C2 security will improve OS/2

Thanks for a well-written article on Windows 95 vs. OS/2 ["Windows 95 and OS/2: A contrast in style," CW, Jan. 8]. It is interesting to note that Windows 95 and OS/2 have similar performance levels, considering that OS/2 provides better performance overhead such as crash protection, an object-oriented user interface and stable multitasking, which Windows 95 doesn't have.

You missed another feature that

The answer is . . .

You neglected to answer Joseph Con's real question in Letters to the editor ["Did Gates say that?" CW, Jan. 29] about Bill Gates' statement, "Today, Cobol, Visual Basic and C are 90% of what goes on" in platform-independent languages. Con asked, "Which non-MS-DOS platforms does Visual Basic run on?" Your answer should have been, "The Visual Basic 32-bit Enterprise Edition runs on Windows NT — a non-MS-DOS platform."

David S. Mohler
Systems manager
Chapel Electric Co.

IBM hopes to deliver with its Merlin follow-on: C2 security compliance. This will let it compete against Windows NT in markets where some have touted this feature of NT as the single biggest reason they picked NT instead of the other operating systems.

Satish Raina
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X terminal could mark the Web spot

Eric Schmidt's column explaining that Internet Web terminals are "Not such a dumb idea, after all" [CW, Feb. 5] seems much more accurate and insightful than the article by Michael Mylrehold that claims, "A dumb Web terminal is

just a dumb idea" [CW, Nov. 13].

I was surprised, however, that Schmidt doesn't think an X terminal is its basis for such a device. Perhaps he doesn't know that today's X terminals already run local client programs in the form of window managers, terminal emulators, clocks and other useful programs that reside on the file server but are downloaded each time they run. This enables instant software updates to all terminals from the file server. Sounds a little like Java, doesn't it?

Now, if someone were to port the Java interpreter and a Java-enabled Web browser as a local client program for the X terminal, they'd have an instant Web terminal capable of executing any Java program by executing it on the X terminal's Java interpreter. And the Java interpreter is self is downloaded, so all the Java interpreter updates can be handled from the file server as well.

With this configuration, you could get all the latest software and services the same way you get cable TV or phone service today, without the headache of installing and configuring the software yourself on a PC. That seems as if it might be marketable to our.

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Those musty monikers have to go

Jan Samzelius

Next is a great name for a vendor. It tells you right away that this is a company with next-generation technology. To be even clearer about its new focus, Steve Jobs re-recently changed his company's name from Next Computer to Next Software.

It may seem like a minor detail. After all, sophisticated business managers don't pick their vendors based on the name of the company. But it does matter. The brand name is a shortcut to the customer's consciousness. It communicates important messages about the company's vision and position.

At a time when the information technology market is crowded and changing at warp speed, the brand name is even more important. The industry is rife with new players, alliances, mergers and disappearing geographic boundaries. Many brands are not well-suited to this new market situation.

For example, some brands are fixed in history. In the wake of the first break-up of AT&T, four of the seven regional Bell telephone companies still use the name Bell. While the name has passive connotations of reliability, it also conjures up images of manual switchboards and operators asking, "What number, please?" Many of the Baby Bells still use geographically limiting names such as Bell Atlantic. But what does that mean to customers in Asia or Latin America? Today's market-

place requires companies to be global, modern and agile.

By comparison, Sprint has a name and marketing message that successfully evoke speed and fiber-optic clarity.

Likewise, Frontier, formerly Rochester Telephone, embodies a clear set of values communicated through its name. In a break with tradition, Frontier stands for leading-edge services, a risk-taking attitude and an imperative to explore new markets irrespective of geography. It quickly matched words with deeds by acquiring ALC Communications to become the fifth-largest long-distance company in the U.S.

Traditionally, branding hasn't been an important part of the high-tech marketing mix. Advertising campaigns and marketing communications have focused on price and customer generation — MCI comes to mind — rather than convey a deeper sense of what the company is all about. As markets converge where entertainment and infor-

> A corporate identity expert argues that a vendor's name says a lot about its strategy.

mation services, different and distinctive images will be required. Being 3 cents cheaper than the competition isn't enough.

Unfortunately, some brand names say more about the organization's internal politics than about what it promises to deliver to customers. Concert, an international joint venture between British Telecom and MCI, tells us the two companies work well together. But the core question for customers is whether they can get reliable connections to their office in Kuala Lumpur.

Even a great company name can be a mixed blessing. When you see Apple's multicolored fruit logo, you know the products will be innovative, easy to use, consumer-friendly and a little fuzzy.

For years, this worked very well in the consumer and education markets. But the nonconformist Apple name was not "corporate-friendly," which may be one small reason that corporate technology buyers never warmed up to Apple and its products.

So be forewarned: In the ruthless and sustained marketing battles ahead, it is important for companies to have the right flag leading the cavalry's charge.

Samzelius is a senior vice president at Diefenbach Elkins, a New York-based corporate identity firm involved in the makeover of Rochester Telephone into Frontier.

How to survive the cybercrash

Steven B. Weissman

I'm worried about the Internet — not as a technology, because I firmly believe in its potential for electronic commerce and publishing, but as the subject of a huge amount of misperception and false expectation.

Today's cyberhype may be fun, but I predict the bubble will burst by the end of the year. At that point, it will be painfully obvious that we have lost sight of what makes the 'net valuable. The venture money will dry up, and you'll have to explain why your Internet vendor went out of business.

Here are my Top 3 signs that the Internet is misunderstood and on the verge of a purge:

● Look at how often the term "World Wide Web" is used as a synonym for "the Internet," even though they're not the same thing. The Web is actually a series of hyperlinked databases; it features graphical interfaces and supports multiple data types. The Internet is the wire that plugs these databases together and supports many other applications as well, including E-mail, Telnet, Usenet, file transfer protocol and gopher.

● Notice how hot browsers are in Silicon Valley and on Wall Street — even though they're basically being given away and do little beyond provide the graphical interface. The other capabilities that are capturing the public's imagination today (such as on-line shopping and virtual reali-

> Internet mania will turn sour this year, but it's still possible to get 'net benefits.

ty) really depend on the functionality of the servers to which the browsers are connected.

● See how many trade shows feature Internet products — even when they're supposed to focus on something else. This isn't necessarily bad, but many exhibitors seem to promote the Internet because their competitors do, not because it makes their product any more useful. The Internet pavilion at DB Expo last December was classic in this regard; it featured many products whose Internet links worked fine but whose value to database developers was never really explained.

The key to avoiding these traps is to remember that the 'net is just a network of networks that relies on a standard set of protocols to ensure smooth interconnections. It's also not new, as it has its roots in the U.S. Department of Defense of the late 1960s. But because neither facts lend themselves well to attracting capital, you don't

hear a lot about them.

What makes the Internet exciting is that it works on a global basis and it promises to do for computer systems in the '90s what interstate highways did for towns in the '50s. But like a highway, the Internet's true value depends on the attractiveness of the sites it links together.

Just as you wouldn't go far a long drive without someplace interesting to go to, there isn't much point in using the 'net without a worthwhile destination.

The beauty of the Internet is that it doesn't care whether the sites it connects are internal or external to your organizati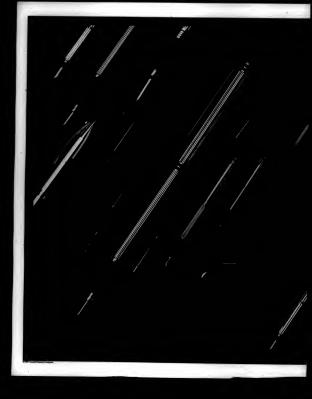on. As a network, it simply is a key piece of information infrastructure — and its role as a corporate intranet is what should have been touted most at DB Expo.

The trick is to focus on the services and processes you'd use the 'net to access. Then you'll reap all the rewards the Internet promises, even after the bubble breaks.

Other wise, you may lose more than the opportunity to use the 'net as the inexpensive public utility it is. You may lose your credibility as well.

*Weissman is president of Kinetic Information, a Wall-
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benefits of new technologies. His Internet address is
76143.3463@compuserve.com.*

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Servers & PCs

Marriage of convenience

By Craig Stedman

IBM hopes RISC-based AS/400 model will keep System/36 users from going to Unix, NT

S omething old, something new, something Blue.

IBM is ironing out the "something borrowed" part. But the computer giant this week will don the other modernizing wedding accessories when it belatedly introduces a RISC-based AS/400 model that can run OS/400 and the SSP operating system from its System/36 midrange line.

The dual operating system support is aimed at keeping the large base of System/36 holdouts from being tempted by Unix and Windows NT when they finally modernize their computers. The AS/400 Advanced Model 436 will let customers continue to run their SSP applications on zippier hardware and gradually convert to OS/400.

On the way out

The System/36 was replaced by the AS/400 eight years ago, but Gartner Group, Inc. in Stamford, Conn. estimates that about 150,000 of the older machines are still in use worldwide. That number is expected to be cut in half by the year 2000, said Tom Bittman, an analyst at Gartner Group.

"Moving NT or PC servers is an attractive alternative for small shops that have stuck with the System/36, especially as the AS/400 is "almost as different as going to another platform"

would be, Bittman said.

Those differences squashed an attempt in 1994 by Automated Training Systems, Inc. (ATS), a System/36 user, to convert its telemarketing application from SSP to OS/400. "We wrote the system for the [OS/400], but it had a different look and feel, and my sales guys just didn't like it," said Larry Vermillion, president of the company in Woodland Hills, Calif.

ATS, which sells computer training courses in the IBM midrange market, retreated to SSP. But it has signed up to betatest the Model 436 in the hope that the machine will provide an easier

transition to OS/400, which provides the relational database and pulldown menu support that SSP lacks.

With both operating systems on board, "it's not like you have to be System/36 today and AS/400 tomorrow," Vermillion said. ATS will stick with SSP for telemarketing, he added. But it plans to consolidate its AS/400-based World Wide Web server with the Model 436 and later make a full migration when the sales representatives get comfortable with OS/400.

The Model 436 is slated to ship March 8. It was originally expected last summer, and then IBM targeted it

for release in the fourth quarter last year. AS/400 officials said shipments were held up because of delays with the version of OS/400 that runs on IBM's PowerPC-based AS/400s. Those systems are in the midst of a staged rollout that will be completed in March.

The Advanced 436 machine uses the same PowerPC chip as the low-end RISC AS/400 models. It follows an SSP-only system that was introduced in late 1994 with an early version of the PowerPC chip that wasn't robust enough to run OS/400.

The Model 436 also can be configured with SSP alone. If both operating systems are used, up to three SSP environments can sit on top of OS/400 as added "personalities" with their own disk space.

Double play

Running the OS/400 with SSP shows some benefits to running SSP alone

	AS/400 with SSP	SSP only
Base memory	64M bytes	32M bytes
Maximum memory	256M bytes	256M bytes
Base disk storage	1G bytes	1G bytes
Maximum disk storage	24G bytes	24G bytes
Supported users	280	180
Communication lines	1 to 20	1 to 8

PC vendors bundling up for 'net travel

Starting at $6,000, Web-ready servers are low-cost alternatives to Unix systems

By Bob Francis

As Microsoft Corp. whets the appetite for Internet use among corporate customers, a slew of PC vendors are gearing up to satisfy that need with bundled Internet offerings from their server groups.

IBM, Hewlett-Packard Co. and Dell Computer Corp. last week announced new Web-ready PC servers with lower prices than current Unix-based World Wide Web servers. Microsoft introduced its Internet Information Server (IIS) last week, and Intergraph Corp. announced its IIS PC servers last month.

The basic bundled system from the PC server vendors — with prices starting at

$6,000 — will include a single Pentium processor, a high-speed network card and Microsoft's Internet software.

By contrast, most of the Unix-based Web servers start at about $12,000. However, they often include additional Internet software for more complex applications, such as Netscape Communications Corp.'s Commerce Server for secure transactions.

Intranet systems

Most of the initial PC systems were designed as intranets, or internal company Internet servers, which one Microsoft's Back-Office suite as the primary application.

Intergraph is offering a firewall server for external Internet connections.

Not all corporate users said they believe these systems are ready to be deployed as Internet servers, however.

"As an IS professional, I see myself, 'How am I going to manage this?' This isn't a PBX where you plug it in and it's working," said Joanne Witt, an information systems manager at an Internet consulting firm in Iselin, N.J.

"The easier they can make this for IS managers, the better," said Ted Julian, an analyst at International Data Corp. (IDC) in Framingham, Mass.

IDC's preliminary estimates show that

more than 200,000 intranet sites will come on-line this year.

Service also is a component of many of these offerings. Huntsville, Ala.-based Intergraph includes free installation and 90 days of free telephone support for most of its Web servers.

Since Microsoft bundles its Internet server software into Windows NT Server, other companies that ship Windows NT Server will package the product with their systems.

Houston-based Compaq Computer Corp., for instance, will package the software in the next version of its SmartStart software installation package that it ships with its Web servers. The company currently relies on its resellers to develop Internet-specific packages.

Closing in on performance

Intel competitors nip at Pentium's heels

By Jaikumar Vijayan

Intel Corp. may be the king of the hill when it comes to unit sales volume in the chip market, but some rivals are catching up on the mainstream performance front.

Cyrix Corp., for instance, says it has closed the performance gap between its chips and Intel's highest-end Pentium processors. Cyrix has added three members to its 6X86 family — the P166+, P150+ and P133+ — that go head-to-head with Intel's 150- and 166-MHz chips.

Before the announcement, Cyrix's highest-end chip was a 100-MHz version of its 6X86, which the company claimed matched the performance of a 120-MHz Pentium chip — well below Intel's fastest Pentium.

Price cuts

Competition has consistently forced Intel to cut prices and innovate in its chip designs and other areas, such as producing motherboards.

The Cyrix announcement, which comes barely a month after Intel's launch of its

fastest Pentiums to date, is unlikely to immediately affect Intel's pricing strategies.

But it underscores a recent trend in which some of Intel's rivals — though many compared with the chip giant — have been matching the company technologically. NexGen, Inc., for instance, has Pentium clones and is developing a Pentium Pro-type chip. NexGen's technology prompted Intel's largest rival, Advanced Micro Devices, Inc., to acquire it.

IBM move

Meanwhile, IBM which makes chips for Cyrix — announced it will sell IBM-brand versions of Cyrix's new chips in the mass merchant market.

"It definitely is a very significant announcement for Cyrix because it positions the company among the technology leaders in the chip business," said Dean McCarron, an analyst at Mercury Research in Scottsdale, Ariz.

The new Cyrix chips come with clock speeds of 110 MHz, 120 MHz and 133 MHz but have performances that match Intel's 133-, 150- and 166-MHz Pentium chips, respectively, when running industry standard benchmarks, a Cyrix spokesman claimed.

Additions to the Cyrix 6X86 family

Chips:	6X86-P166+
	6X86-P150+
	6X86-P133+
Clock speeds:	110 MHz
	120 MHz
	133 MHz
Primary cache:	64K bytes
Availability:	Now

Nakamichi America Corp. has rolled out the MJ-4.4 model CD-ROM changer.

According to the Torrance, Calif., firm, the changer features a direct-loading mechanism that eliminates the use of trays and cartridges and operates in horizontal and vertical positions. Model MJ-4.4 changing mechanism avoids contacting the disc surface, and the loading slot prevents dust from entering. Access to four internal discs is controlled by buttons on the unit's front.

The MJ-4.4 model CD-ROM changer costs $279.

▶ *Nakamichi America*
(310) 538-8150

Uman Technologies, Inc. has introduced Maxmedia TV/Pro II, a remote-controlled driverless external scan converter for both PCs and Macintoshes.

According to the Fremont, Calif., company, Maxmedia TV/Pro II transfers any image displayed on a computer monitor to a large screen TV or VCR for video publishing. Users can adjust the display for zoom, brightness and freeze-frame with a remote control.

Maxmedia TV/Pro II was designed for presentations, training and product demonstrations. It connects by cable to a VGA card and doesn't require the installation of software drivers.

Maxmedia TV/Pro II costs $400.

▶ *Maxmedia*
(510) 651-4000

Brief

Sequoia names new head
The branch is at the top of the tree at Sequoia Systems, Inc., which named the president of a subsidiary to run the

whole company. Michael Stewart founded Texas Microsystems, Inc., bought by Sequoia in March. Sequoia recently named Stewart to succeed Neil McMullan as president and CEO. The change means Sequoia's headquarters will move to Houston from Marlboro, Mass., a company spokesman said.

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Java still
shows some
security flaws, 46

Software

Object? Portability

By Dan Richman

The ability to move applications freely among different object-oriented database products is the goal of a standard released recently by a vendor consortium.

Version 1.2 of the Object Database Management Group's (ODMG) ODMG-93 standard "will ensure application portability among compliant object-oriented [database management systems], tools, middleware and

related software," said Doug Barry, executive director of the Minneapolis consortium. SQL-Java tried to accomplish the same thing in the relational database world.

The ability to move applications from one vendor's object-oriented DBMS to another means users won't be locked into a vendor's product line.

The object-oriented DBMS market is small — it topped $97 million in 1994 — but standards such as these are the key to its future growth.

Users said they were glad to

hear about last month's release of Version 1.2. "It's of vital importance," said Bill Benassi, a programmer at Xerox Intran Corp. in Minneapolis, a division of Xerox Corp. that creates forms, fonts and graphics for Xerox printers.

"I want to be able to develop applications that plug and play as much as possible among vendors. Adherence to standards is the only way to do that," he said.

Committed to change

The 24 members of ODMG, which includes mostly vendors but also corporate end users, have been working on the standard since 1993. Two interim versions have been released, but Version 1.2 is the one with which all future versions will be backward-compatible, Barry said.

The vendors have committed to developing or retrofitting their products to meet the ODMG standard. "I have to make sure my C++ code conforms to the standard if I want to get the portability it promises," Benassi explained.

Products can conform to ODMG-93 Version 1.2 through object definition language, object query language, C++ bindings and Smalltalk bindings.

Currently, it is up to users to determine whether a product meets the ODMG standard. But later this year, the ODMG will certify products that comply with ODMG-93. That certification "ensures portability, though we're not giving money-back guarantees," Barry cautioned.

Goal is to simplify

Still, users can expect more portability from ODMG-certified products than is found in the relational world. SQL is a unifying force there, but vendors have added enough extensions to their database products to complicate application portability. The main object development languages — C++ and Smalltalk — don't require extensions because they are complete already, Barry said.

Despite the portability that the standard promises, it still may be difficult for developers to field object-oriented applications. There is only one tools vendor in the ODMG, which means there is a dearth of ODMG-93-compliant tools to help users create portable applications.

Members only

The following vendors are members of the Object Database Management Group. They have committed to advancing and complying with the ODMG-93 application-portability standard.

Vendor	Product
ADB Redwood Shores, Calif.	Matisse (object-oriented DBMS)
Fujitsu Open Systems Beaverton, Ore.	ODB II (object DBMS)
Gemstone Systems Beaverton, Ore.	GemStone (object DBMS)
Ibex Computing SA Archamps, France	Itasca (object DBMS)
Micram Object Technology Bochum, Germany	Micram (database creation tool)
Object Design Burlington, Mass.	ObjectStore (object DBMS)
ObjectivAY Mountain View, Calif.	Objectivity/DB (object DBMS)
O2 Technology Palo Alto, Calif.	The O2 Systems (object DBMS)
Omniscience Object Technology Santa Clara, Calif.	Omniscience (object DBMS)
Ontos Burlington, Mass.	Ontos DB (object DBMS)
Persistence Software San Mateo, Calif.	Persistence (object layer for relational DBMS)
Poet Software San Mateo, Calif.	Poet (object DBMS)
Sybase Emeryville, Calif.	Sybase (relational DBMS)
UniSQL Austin, Texas	UniSQL (object/relational DBMS)
Versant Object Technology Menlo Park, Calif.	Versant (object DBMS)

Macro viruses pose hazard to PC health

By Gary H. Anthes

More and more software "agents" are traveling over networks, bringing users power and convenience undreamed of a few years ago.

Unfortunately, agents are also bringing users grief. Recently a federal computer incident response team said malicious agents in the form of "macro viruses" have become "a significant hazard."

Macro viruses hide in documents or spreadsheets and are executed when an infected document is opened. They then copy themselves to other files. Most of them have been written for Microsoft Corp.'s Word running on Windows 3.1, Windows 95, Windows NT or Macintosh platforms.

In an alert sent over the internet, the Computer Incident Advisory Capability (CIAC) at Lawrence Livermore National Laboratory in Livermore, Calif, said, "Word macro viruses are no longer an isolated threat. Files can be deleted and may not be recoverable."

The CIAC said seven macro viruses have been discovered, two of which destroy data (see chart).

The response team advised users to scan all new Word documents before opening them in the same way they have traditionally scanned for viruses in new software.

Microsoft, it checks all Word documents as they are opened and warns the user if they contain a macro. The scanner can be downloaded to the Internet from Microsoft's home page at http://www.microsoft.com, using the search command to find "macro virus."

The most common virus is the Concept macro virus, according to Sarah Gordon, a security analyst at Command Software Systems, Inc. in Jupiter, Fla. And yet few people scan for it, she said.

Stephen Cobb, special projects director at the National Computer Security Association in Carlisle, Pa., said a member company with 10,000 PCs reported finding a macro virus on nearly every one.

The biggest threat from macro viruses is that they could be used to implant a Trojan horse, which could then be used to capture passwords, Cobb said.

The danger from software agents varies considerably depending on what kind of system spawns them, said David Chess, a security specialist at IBM's Thomas J. Watson Research Center in Hawthorne, N.Y. For example, unlike Word, the Java programming environment from Sun Microsystems, Inc. has stringent security controls built in to it, he said.

"Getting a Word document is much more dangerous than getting a Java applet," Chess said.

Computer viruses

Microsoft tries to brush off Sun with Sweeper

By Frank Hayes

Will Sweeper clean up Windows-based Internet development?

Microsoft Corp. hopes so. Sweeper is the code name for Microsoft's project to build in to Windows NT and Windows 95 application programming interfaces (API) for the Internet. Included are APIs for Simple Mail Transfer Protocol, Hypertext Transport Protocol and file transfer protocol.

With Sweeper, developers who create applications that communicate across the Internet wouldn't have to handle the details of many different protocols.

Users connect to the Internet through the Winsock utility, which requires the would-be Internet developer to specify the protocol being used and load the appropriate code. Sweeper would allow the operating system to handle these connections.

"If they can put that functionality into the Windows programming interfaces, it's going to make the Internet a lot easier to use for client/server applica-

tions," said Michael Regelski, director of software development at Lenel Systems International, Inc., a manufacturer of multimedia development tools and security systems in Rochester, N.Y.

Sweeper also is part of Microsoft's defense against Java, the Internet development language from Sun Microsystems, Inc. Sweeper moves the connection protocols into Windows, but Java makes them part of the development language.

It isn't clear how much help corporate developers will get from Internet-enabled versions of Windows 95 and NT.

Many programmers already use third-party products that hide the details of the Internet from developers who use popular visual environments such as Microsoft's Visual Basic and Powersoft

Corp.'s PowerBuilder.

And some developers who use C++ for Windows programming said the traditional model of client/server software — in which a stand-alone client application communicates with a

remote server — will fall by the wayside when the Internet is involved.

"To be honest, [the traditional model] probably doesn't make sense," said Charles Knotts, a systems analyst at Fox Television

Stations, Inc. in Hollywood.

Traditional client applications are stored on a client PC, which makes them harder to maintain and update, he said. Applications written in Java can be downloaded by users when needed and can be updated on a server.

"There's some learning curve with the new approach, but I think it'll probably be easier in the long run," Knotts said.

Still, how an application is built may depend on its purpose. "If it's transaction-oriented, it makes more sense to use traditional client/server architecture, where nothing but data runs across the network," Regelski said.

"But if you're looking at something like a corporate news service, where you're trying to get information that may be published in different forms, it makes sense to download the player," he said.

Take your pick
Internet programming environments

	Sweeper	Java
What is it?	Microsoft's effort to incorporate support for Internet communications in 32-bit Windows	Sun Microsystems' system for developing multi-platform Internet applications
How is it used?	Programmers call C or C++ functions in PC client applications	Developers create programs that are downloaded by users as needed
Pro	Simplifies the use of Internet protocols	Runs on multiple platforms; applications are centrally stored and maintained
Con	Limited to Windows; more work required to update applications	May run slower than conventional applications; Internet required before it can run

---

Alladin Software Engineering Ltd. has introduced Human-Oriented Programming Environment (HOPE), a product for C/C++ and Sun Microsystems, Inc.'s Java programmers.

According to the New York company, HOPE introduces the concept of team development to C/C++ and Java programming groups to help them create code faster. As the developers write code, the product organizes it into a collection of particles that are stored as unique objects in the database repository. Other development centers are based on mainframe text files.

HOPE's collaborative features include information-sharing among team members, smart merge tools, process-oriented software configuration management, locking of fine-grained objects and real-time change management.

HOPE integrates with the developer's environment and lets developers continue to use existing programming tools, including compilers, debuggers and class libraries.

HOPE costs $995 per seat.

► Alladin Software Engineering
(212) 564-5678

ParaSoft Corp. has announced CodeWizard, a C++ analysis tool.

According to the Monrovia, Calif., company, CodeWizard reads C++ code and displays error messages that indicate which rule was violated and why the violation occurred.

It specifies the file name and line number of code that is responsible for the violation.

CodeWizard was designed to check code for portability and prevent the misuse of language-specific features.

CodeWizard costs $999.

► ParaSoft
(818) 305-0041

Geodesic Systems, Inc. has introduced Great Circle for Microsoft Corp.'s Visual C++ 4.0.

According to the Chicago company, Great Circle for Visual C++ eliminates memory bugs without compromising a program's performance. Users can drop Great Circle for Visual C++ into an application to stop memory leaks and premature free-ups without changing a program's code.

Great Circle for Visual C++ also is available for Microsoft Corp.'s Windows 3.1, Windows NT and Windows 95.

Pricing for Great Circle for Visual C++ starts at $495.

► Geodesic Systems
(312) 728-7196

Still a few chinks in Java's armor

By Gary H. Anthes

Sun Microsystems, Inc. has done a good, but not perfect, job of ensuring security in its Java programming environment, users and experts say.

Alexander Newman, executive director of the Sun User Group in Boston, said Java was designed so that in theory it can do no harm. Nevertheless, Java "applets" do on rare occasions crash a system, he said.

Would a hacker's attack applet fail?

"In theory it should, but there are a lot of smart people out there with a lot of time on their hands," Newman said. "It would be hard to break Java security, but it sure as hell isn't impossible."

Go ahead, try it

Marianne Mueller, a staff engineer in Sun's Java Product Group, expressed impatience with those who speculate about security lapses in Java.

"There's a lot of hand-waving about so-called Java security attacks," she said. "I invite people to write these malicious applets, and go for it."

Mueller said any security holes found by the attack applets would result in fixes to Java and would

be reported publicly at Sun's World Wide Web site.

Still, Newman cautioned users not to be lulled into a false sense of security by Sun's claims of Java's invincibility.

According to Paul McNabb, a vice president at Argus Systems Group, Inc., a vendor of Unix security products in Urbana, Ill., Sun has done the following for Java security and reliability:

• Designed the language so bugs in Java programs are unlikely to have destructive effects, such as overflowing memory and destroying data. "Java applications are well-behaved," he said.

• Designed Java so that creators can register their applets and users can authenticate them cryptographically.

• Removed from C++ many features that could be used to get around security measures. Java is derived from C++.

• Built control features into the HotJava Web browser so user applets can't read from or write to protected files.

"As shipped, HotJava imposes rather draconian access controls," said David Chess, a security expert at IBM's Thomas J. Watson

Systems security

Research Center in Hawthorne, N.Y. "By default, it is configured to not allow many dangerous operations."

But that doesn't mean a Java applet can never do harm, Chess warned.

He said users may mistakenly override HotJava warning messages that an applet is attempting to perform an operation that isn't allowed.

"There are enough applets out there that would like to read or write to file-hidden] parts of your disk that people will get tired of seeing that little alert message, and they'll just turn the security off," Chess said.

Argus sells a product, called Decaf, that moves security from HotJava outward to encompass other directories and devices that several files to Java applets and other network-borne agents such as macro viruses.

Software

Lotus tries to get time on its side

Will improve Notes' calendaring and scheduling, add Organizer features

By Tim Ouellette

Lotus Development Corp. officials say it's time to improve the calendaring and scheduling capabilities of Notes groupware.

The Cambridge, Mass., division of IBM will add features from its Organizer software to Notes, make Notes interoperable with Organizer and add hooks to IBM's host-based messaging software.

In a 4.x upgrade to Notes, expected by the middle of the year, Lotus will add basic calendaring and scheduling features to Notes, which currently depends on user customization or third-party software for such functionality. The information will be stored in a user's Notes mailbox and will appear as a calendar folder.

"This will raise the bar for Notes capabilities," said Bob Flanagan, an analyst at The Yankee Group in Boston.

"The typical user can't use the

stuff in their calendaring software natively with other E-mail packages," said Steve Boyd, principal at Work Media in Herdon, Va. "That is incredibly annoying. Users want information as soon as possible with as much richness as you can get."

Messaging software companies have improved the quickness of moving information around, but they have to let users add more levels of information at one time and from one place instead of making them move among several applications, Boyd added.

One calendar for all

On the host side, IBM and Lotus are working to have mainframe-based OfficeVision users work on the same calendar as Notes users through the Lotus OfficeVision Calendar Connector. The Connector will run on Notes, OS/2, AIX and Windows NT servers.

Lotus' strategy of adding features to Notes and integrating to

> **To improve group calendaring and scheduling, Lotus and IBM will integrate Lotus' desktop contact manager and IBM's host-based system by:**
>
> • Adding calendaring and scheduling features to Notes, Notes Mail clients and CC:Mail
>
> • Allowing Notes and Lotus Organizer clients to share calendar information by maintaining the data in the Notes data storage
>
> • Delivering the Lotus OfficeVision Calendar Connector, which provides bidirectional access to calendar data between Notes and IBM's host-based OfficeVision messaging system
>
> • Scheduling support between Notes and Organizer across the Internet with SMTP/MIME Gateway for Notes 4.0

host systems was the key buying decision for a Texas oil firm that uses OfficeVision, according to Todd Hunter, president of a Dallas company that sells a calendaring add-on to Notes. The migra-

tion to Notes "won't happen overnight," Hunter said, so the client needs the Connector to enable coexistence of the Notes and OfficeVision systems.

Although Lotus is just now get-

ting into the scheduling game, other vendors have provided this feature for a while. For example, analysts have long credited the success of Novell, Inc.'s Group-Wise messaging-based groupware with its strong calendaring and scheduling features.

Cheaper alternatives

And some users have turned to less expensive scheduling packages such as Commence 3.1, a workgroup information manager from Commence Corp. in Shrewsbury, N.J., and OnTime Enterprise 2.0 from Campbell Services in Southfield, Mich.

"Once a sales lead gets logged, and if appointments need to be made at that time, an agent automatically makes the appointment and schedules the conference room," said Ed Hess, owner of a Ziebart Tidy Car franchise in Audubon, N.J.

Hess said he customized Commence's automation agents for scheduling and other groupware features because he "got tired of doing things over and over again."

IBM tools give business processing a boost

By Suruchi Mohan
ORLANDO, FLA.

IBM has broadened its workflow product line with two new packages.

The Business Process Modeler, also known as ProModeler, is the package that excited the analyst community most. It is a tool for planning a business process.

The other package, Internet Connection, connects IBM's Flow-mark workflow family to the Internet.

ProModeler "is another link in the chain of universal process automation," said Gerry Murray, a research analyst at International Data Corp. in Framingham, Mass. "One company can supply and support business process automation [entirely]."

There is no dearth of business process tools, but IBM took a different approach than the others, analysts said. IBM saved something called Line of Visibility Enterprise Modeling (LOVEM).

When an organization sets up a business process, it can see which portions will be visible to the customer. In this way, it can fine-tune

its offerings to the customer.

"LOVEM exposes very clearly all the interfaces between customers and the process," said Bruce Silver, principal at Bruce Silver Associates in Weston, Mass.

It forces a company to think about the effects on its customer base even as it starts the process of business re-engineering, he said.

The ProModeler will be available at the end of the month on OS/2, Windows versions will be available later. The product will cost $4,000 per copy.

Just browsing

Internet Connection will let users download a Flowmark worklist by using a World Wide Web browser.

"Internet integration is a business requirement," said Ronni Marshak, editor in chief of the "Workgroup Computing Report," a newsletter in Boston. "If they weren't [integrating], they'd be in trouble."

The Internet Connection is scheduled to be available in the summer. Pricing hasn't been determined.

NCD Software Corp. has announced PC-Xware for Windows 95, an X11R6-compliant, 32-bit server.

According to the Mountain View, Calif., company, PC-Xware for Windows 95 gives users the multitasking interface of Windows 95 so they can access remote X Window System applications and files. The product also lets systems administrators manage all PC-Xware users from a single PC.

PC-Xware includes Unix connectivity tools for PC users and was designed to operate in an open systems environment for application interoperability and scalability.

Pricing for PC-Xware for Windows 95 starts at $545.

▶ NCD Software
(415) 694-0650

Information Technology Solutions, Inc. has unveiled Zydeco/400, a document management system.

Zydeco/400 is a Windows-based document storage and management tool for IBM's AS/400. According to the New Orleans company, the tool sets are transparently join data from LAN-based, SQL-based servers

and the AS/400 to create a virtual record. Zydeco/400 works across any network or location to let users view real-time AS/400 data combined with any series of SQL/Open Database Connectivity-compliant PC/LAN databases, including Lotus Development Corp.'s Notes and Approach.

Zydeco/400 was designed to let users scan, store, access, route, electronically mail and list all paper and electronic documents from one desktop.

Pricing for Zydeco/400 starts at $4,995.

▶ Information
Technology Solutions
(504) 522-7570

MicroHelp, Inc. has rolled out Uninstaller 3.

According to the Marietta, Ga. company, Uninstaller 3 includes a 32-bit Windows 95 version and a 16-bit version in the same package, which lets users remove unwanted applications from hard disk drives.

Uninstaller 3 features linking technology that scans the system configuration to identify the relationships of files to executables and interrelationships among shared files.

The product keeps a compressed backup of every deletion it makes, which lets users restore files that are deleted accidentally. Uninstaller 3 also includes Win-

dows cleanup, move, archive, transport and duplicate file finder features.

Uninstaller 3 costs $40.

▶ MicroHelp
(770) 516-0899

Design Consultants, Inc. has introduced Workplace Manager, a Windows-based management automation product.

According to the St. Louis company, Workplace Manager was designed to automate the management of information systems work from initial service request entries to completed projects.

It focuses on backlog management, planning, tracking, time reporting, accounting and document management for service requests, development projects, maintenance requests and problem reports.

Service requests in a backlog queue can be routed for electronic approvals, supplied with additional information and shared with project scheduling software for planning simulations and scheduling.

Management reports can be cloned and customized to provide consolidated project reporting.

Pricing for Workplace Manager starts at $2,895 for a five-user system.

▶ Design Consultants
(314) 434-5750

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You'd better use the MIPS RISC processor to run Windows NT. It's three times faster than the Pentium processor.

Don't come in last, like I did.

You see, I was presented a similar opportunity once, over 25 years ago. I was at a party, and I ran into a very animated young man from the Pacific Northwest.

He asked me if I'd like to invest in something new.

He explained how he thought that one day, people everywhere would wear athletic shoes all the time. For all kinds of things. And he showed me some drawings of shoes, with the oddest looking logo I'd ever seen.

"Sounds very interesting," I said, trying not to sound too patronizing. "But new things tend to make me nervous." And with that, I excused myself.

Now unless you've been living on another planet the past twenty years, I don't have to tell you what happened to that man and his idea.

So when my son, the computer whiz, told me NEC's 250 MHz V_R4400 runs Windows NT up to three times faster than the 100 MHz Pentium processor, I listened.

Then I read that Microsoft actually used the MIPS processor to develop Windows NT. And that lots of Fortune 500 companies are already successfully using it.

And now, looking back, I don't think I would've dismissed that young man so quickly. I'd have asked a few more questions. The same kind of questions you should be asking NEC about that amazingly quick MIPS RISC chip. Just call 1-800-366-9782 and ask for Info Pack #185. Because opportunities like this come around once, maybe twice in a lifetime.

NEC

The Enterprise Network

Better than you think

Many problems with Windows NT Server solved but not publicized

By Laura DiDio and Patrick Dryden

Though Windows NT Server lacks some management utilities, it still has plenty of them. You just have to know how to find them.

That's the assessment from some users and systems integrators, who say that despite Microsoft Corp.'s acknowledgment that some management capabilities are missing from

Main Issues in Windows NT Server

User Manager

Lets managers create or delete users' accounts and control users' access rights.

User Manager

Lets administrators control what processes are running and who is accessing the server.

Performance Monitor

Lets administrators locally or remotely monitor systems and network events and statistics on Windows NT Servers throughout the enterprise.

Event Viewer

Lets administrators view systems-, security- and application-oriented events. It also allows administrators to view the results of security audits.

Windows NT Diagnostics

Diagnoses any problems with the software, hardware, device drivers and services.

Network Client Administrator

Lets administrators automatically install over the network client software including DOS, Windows for Workgroups and Windows 95.

License Manager

Lets network managers control how clients' access licenses for Windows NT Server are being used.

Disk Administrator

Manages disk partitions to allow control of where data resides on the disk.

Backup Utility

For local and remote backups.

User Profile Editor

Controls desktop applications. This facility will be enhanced in the Windows NT 4.0 Shell Update release to include Windows 95 user profiles.

the product [CW, Feb. 12], it works better than many think.

Deric Scott, a systems engineer at Information Management Systems, Inc., a systems integrator in Atlanta, says he believes the lion's share of the management problems stem from the fact that "Microsoft just hasn't done a good job of advertising utilities like Performance Monitor. And they can be a little difficult to find within the [network operating system] if you don't know what you're looking for."

Not all the holes are in fact holes, agreed Mark Nash, Microsoft's group product manager for Windows NT Server in Redmond, Wash. He said Microsoft needs to make users more familiar with product features such as User Manager, NT's version of the Syscon utility in Novell, Inc.'s NetWare (see chart). Syscon lets network administrators control and assign access rights to users.

Utility rates

In some cases, users and systems integrators rate the Windows NT Server management tools — particularly the Performance Monitor utility — higher than rival management utilities.

Performance Monitor incorporates a graphical user interface that provides LAN administrators with details such as the number of disk accesses in a specified period of time.

"The Performance Monitor is better, than anything you see in most installations of Unix or NetWare. Neither of those platforms has anything as sophisticated right now," Scott claimed.

Mark Minasi, an expert user, who wrote *Mastering Windows NT Server 3.51*, offered some caveats. He noted that Windows NT Server management facilities are better than average for a first software release but still lag behind NetWare and Unix in the number of third-party management applications available.

Overall, however, Minasi gave the underlying Windows NT Server network operating system high marks for reliability. He said its management utilities "work well, though users sometimes have to go on a treasure hunt to find them."

But in some cases, the utilities are nowhere to be found.

Take the basic function of adding multiple users or groups to NT Server networks. Microsoft doesn't include this capability, and to get it — and other basic facilities — businesses must buy the NT

Server Resources Kit, which costs $99.

Pete Cahill, a server systems analyst at Ouram Sybrain, Inc. in Danvers, Mass., found many of the Windows NT Server management tools to be very good and said there are plenty of utilities in Microsoft's resources kit. Nonetheless, Cahill said he still had to search the Internet "for tools that monitor server processes to give me full control of distributed servers."

However, Scott said it takes only "about half a day to teach network administrators the ins and outs of Windows NT Server. By contrast, it takes a week to

import the same level of knowledge for NetWare 4."

David Strom, president of David Strom, Inc., a consulting and testing firm in Port Washington, N.Y., noted that Windows NT Server's graphical user interfaces and tools obviate the need for administrators to "initiate a more complex and time-consuming NetWare-like" command-line setup to implement the management utilities. "NT Server management utilities are pretty obvious," Strom said.

No contest

They may be obvious, but some say they lack depth.

Brian Murphy, a senior analyst at The Yankee Group in Boston, called NT Server and its adjunct Systems Management Server "a shell compared to what's available for managing NetWare, Unix and legacy systems."

Administrators turn to outsourcing for answers to performance questions

By Patrick Dryden

Analyzing the performance of large client/server networks has grown complex enough to send analysts into analysis.

Vendors and service providers have stepped in to fill this breach, which hasn't been satisfactorily filled with network management products. Network traffic statistics yield charts and graphs, but that isn't enough, analysts say.

Administrators can't easily answer vital business questions with these tools. For example: Who should pay for usage and upgrades as bandwidth demand rises? What impact will Notes, Oracle, SAP R/3 and other new applications have on network traffic and key services?

It is also difficult to figure out the answers. Staff and budget sizes are limited. Experts are hard to find, afford and keep. Analysis tools are difficult to apply. Operators can't get off the treadmill of reacting to immediate problems so they can pursue long-term research.

This situation fuels the trend toward selective outsourcing of management functions, market analysts say.

Surveys by The Yankee Group in Boston show that users need capacity management and other proactive measures to answer daunting performance ques-

tions. But the cost and complexity of tools is an obstacle to future-proofing their networks, users said.

"Users must have a million-dollar budget to acquire software, train staff and apply them to ongoing analysis," said Jennifer Pigg, vice president of data communications at The Yankee Group. "They don't attempt to change their networks every day, so it's better to pay a service bureau to come in and model the

Performance analysis

network once a year, every few months or when a problem occurs."

Service providers that might include regional specialists or full-scale outsourcers have offered to take over specific tasks — videservers network maintenance or desktop support, for example. They are addressing the increasing need for analysis services.

"We needed a baseline profile of our network to know how to upgrade and budget given what we had. But we didn't have all the management tools in place or expertise on staff," said Jim Brit, MIS director at Brown, Rudnick, Freed & Gesmer, a law firm in Boston.

Britt found the help he needed at Charter Systems, Inc., a consultancy and outsourcer in Waltham, Mass., formerly known as New England Systems.

"We can't keep up with all the changes

**Behind Bill Downs'
success in keeping Earth
safe from alien life-forms**

is a client/server
network that sends sales
data throughout the
Sega* empire instantly

Wireless users anticipate effects of reform

By Mindy Blodgett
and Neal Weinberg

Wireless users should get one-stop shopping from the telecommunications reform legislation, according to industry observers.

Users may now have access from the same source to both local and long-distance traditional telephone and wireless voice and data services. That's the promise of the massive telecommunications reform legislation signed into law Feb. 8.

But the actual impact of the law may not be clear for months or even years, analysts caution.

The reforms will allow cable operators and regional and long-distance telephone carriers to compete in one another's markets for communications services [CW, Feb. 5].

While telecommunications companies expect to offer lower prices and better services in the wake of the sweeping deregulation, industry observers also predict far-reaching effects on the wireless arena.

Most wireless operators contacted last week wouldn't speculate on the reform's potential impact on their systems. But Bridget Howell, manager of Wireless Data Communications at Ameritech Cellular Services in Hoffman Estates, Ill., said the reforms will make marketing wireless services easier. The reforms will bring about the ability to offer one bill for both local and long-distance cellular services.

Robert Rosenberg, an analyst at Insight Research Corp. in Livingston, N.J., pointed out that

telecommunications reform

REGIONAL BELL OPERATING COMPANIES will be able to enter long-distance markets once the local markets are opened to competition.

LONG-DISTANCE CARRIERS will be able to provide local telephone service.

CABLE TELEVISION OPERATORS will be able to provide telephone services.

PASSAGE OF THE BILL IS EXPECTED TO RESULT in a wave of mergers and alliances between cable, long-distance and local service providers. That will lead to lower prices and increased availability of services.

AT&T Corp is expected to use its wireless division to make an end-run around the regional Bell operating companies and offer local service.

That's exactly what Lonnie M.

Johns Jr., corporate controller at National Fruit Product Co. in Winchester, Va., is looking for. Johns said he anticipates that once the effects of reform begin to be felt, he will be offered a wireless/long-distance package that will let him do one-stop shopping for local and long-distance service.

Concerns remain

Despite the promise of lower prices in the wake of the reform legislation, some analysts and users have worries.

Del Moore, strategic planner at Sabre Computer Services, which provides wireless communications for American Airlines via AT&T Wireless Services, said he hopes the goal of increased competition and lower prices will be met.

"But we have reservations," Moore said. "We're concerned that the legislation might lead to one or two players becoming dominant, which would not be good for prices."

Carriers file frame-relay rates

The four major long-distance carriers recently filed formal frame-relay rates with the Federal Communications Commission, in keeping with the FCC's recent ruling that frame relay is a basic, not an enhanced, service.

The filing helps users because it provides a public framework that establishes a starting point for negotiations

of volume discounts and bundled services.

Monthly frame-relay costs include a per-port charge and a charge in reserve a certain bandwidth on the public network. For comparison, the chart below shows port charges for the lowest-speed frame relay at 56K/64K bit/sec. and the highest-speed frame relay at 1.5K bit/sec. or T1.

Frame-relay rates

Company	Monthly port charge (per month)	Committed information rate (one-way) at 32K bit/sec.
AT&T	$290 (56K and 64K bit/sec.)	$33
	$2,640 (1.5K bit/sec.)	
LDDS WorldCom	$193 (56K and 64K bit/sec.)	$30
	$1,598 (1.5K bit/sec.)	
MCI	$180 (56K and 64K bit/sec.)	$32
	$1,470 (1.5K bit/sec.)	
Sprint	$180 (56K and 64K bit/sec.)	$115*
	$1,275 (1.5K bit/sec.)	

*Two-way flat rate regardless of speed

Performance

CONTINUED FROM PAGE 53

in order to avoid spending on technology that won't deliver for us," Britt said.

He said hiring a consultant such as Charter helps him evaluate server platform options for new applications and "how they affect everything else in an organic network."

Larger organizations with specialized network management staff need help, too.

For instance, few users understand how to establish alarm thresholds, manage that reactive process or apply tools to evaluate overall network performance, according to Andrew Jazwinski, president of Network Performance Corp., a consultancy in Dunkirk, Md.

He recalled demonstrating Remote Monitoring (Rmon) software for analyzing segment traffic at one government agency. There he discovered that about 200 Rmon agents for performance monitoring were already available across the network. Administrators at the agency weren't aware that the Rmon agents existed and how they could help.

Make Systems franchises

A fter years of promoting and explaining its sophisticated software for modeling and designing wide-area networks, Make Systems Inc. launched a series of consulting services last week.

Now, instead of spending time and effort modeling and designing WANs, administrators can call for immediate help with baselining, application planning and capacity planning services from an engineer running Make Systems' NetMaker XA suite.

That's because users have shown a deal lack of enthusiasm for applying this or any other evaluation tool, said Steve Howard, president of the Mountain View, Calif., vendor and now, consultancy.

But because Make Systems prefers to remain focused on selling software, it will partner with a major telephone carrier and with integrators to deliver such services, Howard said.

Such steps to franchise these services will help users

because network analysis tools lack automation capability, said Brian Burba, an analyst at International Data Corp. in Framingham, Mass. "[Information technology] departments remain bogged down with troubleshooting and projects so can't devote the human resources required for proactive analytical tools even if their staff does have the expertise," he said.

GTE Government Systems Corp. in Chantilly, Va., uses NetMaker XA and other tools to help design and upgrade large networks for federal agencies. Conducting the optimal WAN or evaluating a performance scenario requires a big investment in acquiring the right software and learning how to apply it, said Gene Plecha, manager of systems and technologies at GTE.

Make Systems offers the three NetMaker Solutions consulting services starting at $1,750 per day plan expenses.

— Patrick Dryden

Alexander LAN, Inc. has rolled out Server Protection Kit 2.0 for Novell, Inc.'s NetWare 3.11 through 4.10.

According to the Nashua, N.H. company, Server Protection Kit 2.0 automatically handles NetWare server crashes. It features an emergency diagnostic tool that takes over the file server after a crash, runs diagnostics and creates a crash file that contains details about the condition of the server when it crashed. It also has a debugger that details the calls and events that led to the crash. In addition, it traps memory-corrupting loadable modules, drivers and operating system kernel code that would otherwise cause a server crash.

Server Protection Kit 2.0 costs $698 per server.

► *Alexander LAN*
(603) 880-8800

Emulex Corp. has unveiled Light-Pulse Fibre Hub, a Fiber Channel hub.

According to the Costa Mesa, Calif. company, Fibre Hub was designed to simplify management of Fiber Channel arbitrated loop networks with full-speed Fiber Channel throughput of 1,062G bit/sec. It centralizes the loop network in a single location, which results in a physical star topology that operates as a logical loop.

A single Fibre Hub can connect up to 10 network devices, including workstations, servers and hard disk drives. Multiple 10-port hubs can be interconnected to support larger configurations. The product supports automatic bypassing of unused or un-powered ports.

LightPulse Fibre Hub is available with 10 copper twin-axial ports, 10 shortwave multimode fiber-optic ports or as a combination unit with eight fiber-optic ports and two copper ports. Pricing starts at $2,995.

► *Emulex*
(714) 662-5600

Biscom, Inc. has introduced a Simple Network Management Protocol-based alarm management module for its line of Faxcom fax servers.

According to the Chelmsford, Mass. company, the alarm management module monitors problems that arise during the operation of computer-based fax services and notifies the administrator. Monitored events include network link failures; internal errors; problems with fax port, fax board or telephone lines; low disk space; and rebooting the fax server.

Pricing for the module starts at $1,995.

► *Biscom*
(508) 250-1800

Fotec, Inc. has announced WireDoc, a network component tracking product.

According to the Medford, Mass. company, WireDoc is a relational database that tracks every component in a network, including hardware, connections and test data. It was designed to complement Fo-doc. Fotec's database program for fiber-optic networks. WireDoc tracks up to 10 million records and allows hot-key insertion of sequential data after a format is chosen.

WireDoc costs $450.

► *Fotec*
(617) 396-6155

Sony Electronics, Inc. has unveiled TriniCom 5000, a group videoconferencing system.

According to the San Jose, Calif. company, the product lets us... a participa... in full-motion, two-way audio and video communications. It includes built-in, four-party multipoint conferencing functionality with a video/audio processor, a high-resolution camera, a wireless remote control system and a 27-in. television.

TriniCom 5000 costs $21,500.

► *Sony Electronics*
(408) 432-0190

The Internet

The Internet

More roads
lead to the 'net

Word processing firms add Internet functions

By Lisa Picarille

Internet-enabled word processors are like tailfins were on older cars — even if you don't need them, you just have to have them.

Microsoft Corp., Lotus Development Corp. and Corel Corp. are adding Internet capabilities to their word processors that will include direct access to the World Wide Web from within the word processor.

They will also provide the ability to convert documents in to Hypertext Markup Language so that the documents can be posted on the Web.

Software upgrades

These functions are in Microsoft's Word for Windows and will ship this spring as part of Word for the Macintosh. Lotus' WordPro with its Internet features started shipping in December, and Corel (pending its buyout of Novell, Inc.'s Business Applications Group) expects to deliver an Internet-capable release of Word-Perfect in April.

Pre-emptive strike

According to Nicole Miller, an analyst at market researcher International Data Corp. in Mountain View, Calif., the Internet is becoming more of a threat to the word processor's position as the primary interface for PC users. So vendors are integrating the Web with their word processes.

But don't expect the added Internet capabilities to draw users away from their word processors or lure them to the Web.

"Right now we are more concerned

with advancements [such as] speech recognition and advancements that make it easier to perform mundane functions," said Frank DeVito, an information systems manager at Rogers & Wells, a New York law firm with 1,000 copies of WordPerfect.

DeVito said there are massive amounts of training and expenses associated with word processing. To replace WordPerfect we would have to have a very good reason, beyond the Internet features. We would need clear proof of the advantages."

Some users aren't even on the Internet yet. Word user Lee Stone, the de facto network administrator at Ace Industries, Inc., a Norcross, Ga. construction equipment supplier, said, "I'm interested in the Internet, but right now we are only at the stage of setting up a prototype intranet. Anything that improves the flow of information is a good thing and worth at least checking out."

Observers say it will be hard for developers to come up with anything compelling enough to prompt users to switch products.

"Word processing is one of those markets where the basic product configuration is close to perfect," said Jeffrey Tarter, editor of "Softletter," an industry newsletter in Watertown, Mass.

"It's like the automobile industry. Detroit goes to great efforts to generate excitement about products that don't fundamentally change from year to year. And like a car, in five years your word processor will still be in good running condition," he said.

Browsers boil over
with new features

By Kim S. Nash

A pounding horse race among World Wide Web browser vendors so far has translated into a steady stream of new features for users.

Overall, it is a one-upmanship match between Microsoft Corp. and Netscape Communications Corp., with other firms joining in.

Questions such as "Sprechen Sie Deutsch?" and "Can you see 3-D?" may not be burning concerns for information systems managers, but these are some of the features Web browser makers have added to their latest releases. More practical capabilities, such as development features and management utilities, also have sprung up in the new generation of Web viewers.

Netscape in Mountain View, Calif., for example, last month shipped a beta version of Navigator Gold, a browser that has application-development tools for building Web programs.

One Netscape customer, users said, is its plug-ins. Plug-ins are add-on modules made by third-party developers to work with Navigator. First Floor Software in Mountain View, Calif., for example, makes a Web site monitoring plug-in called SmartMarks, which costs $24.95. Add-on products aren't available for some other browsers.

Plug-ins interest John Schwart-

zendruber, technical manager of the Internet services group at Eli Lilly and Company in Indianapolis.

The third-party products offer capabilities that Netscape doesn't sell, such as the ability to listen to audio clips on the browser, Schwartzendruber said. That could come in handy in future work-sharing applications, he said.

Language barrier

Meanwhile, Microsoft in Redmond, Wash., hopes to appeal to multinational corporations and foreign-markets with its latest version of Internet Explorer.

The browser understands English and 12 other languages, including Dutch, German and Italian.

Three-dimensional views, while not in big demand at a typical IS shop, nonetheless are offered in several new browsers. Superscape, Inc. in Palm Springs, Calif., among others, has gone 3-D with its Viscape browser.

Users can download it for free at http://www.superscape.com.

Elsewhere on the browser front, a few niche products have been introduced. Quarterdeck Corp. in Marina Del Rey, Calif., plans to ship a package that consolidates users' electronic mail, faxes and voice mail. Quarterdeck and Belgian partner Lernout & Hauspie Speech Products NV call the product a "browser," but it is a graphical utility for accessing the Internet rather than the Web.

Beyond the basics

Word processor vendors are enabling their products for the Internet
to capitalize on the popularity of the World Wide Web

1994 TOTAL UNITS SHIPPED: 16.6M	1995 TOTAL UNITS SHIPPED: 20.2M*

*Projected

■ Microsoft's Word   ■ Novell's WordPerfect   ■ Lotus' WordPro   ■ Other

Source: International Data Corp., Framingham, Mass.

The Internet

Vanguard makes 'net link with clients

Firm provides electronic access to data

By Mitch Wagner

At another investment company, clients get a piece of the rock. But at the Vanguard Group, Inc., clients get a piece of the Web.

Vanguard in Valley Forge, Pa., has an aggressive program for electronic commerce over the Internet. The company is one of the first investment houses to give customers access to their accounts over the Internet.

Moreover, Vanguard is a pioneer in private use of Internet technology. It sends account information over direct connections to client companies using Internet technology rather than the public Internet, which isn't secure.

Vanguard went live on the Internet in July — just one step ahead of demand, company officials said.

"Communications with clients used to be through the mail or an 800-number, and in the future it will have to be electronic access," said Bob DiStefano, senior vice president of information technology at Vanguard. "You don't get to vote on whether you can play in this arena."

Hooked up

Vanguard offers Internet access as part of its program for managing 401(k) plans for corporate clients.

Individual investors can check account information, get prices and perform transactions on the PCs that they use to do their jobs. Investors use the same leased-line connections that the company's human resources department uses to transfer payroll-deduction information between the client company's machines and Vanguard.

Employees of Vanguard's client companies use a custom version of Spyglass, Inc.'s implementation of the Mosaic browser to view account information. At Vanguard's behest, Spyglass added encryption and security modules from V-One Corp. to secure confidentiality of transmitted data.

So far, Vanguard uses its Web connectivity for one client, Compaq Computer Corp. Vanguard this year hopes to branch out the service to other companies and offer it on the Internet.

The company also is evaluating new client and server software to make the connection more robust and secure. "We started this a year ago. There's been a lot of new technology [that has] come on the market since then," said Dave Stolzfus, principal for advanced technology at Vanguard.

In setting up the private Internet connection to customers, Vanguard went to systems integrator Cambridge Technology Partners, Inc. in Cambridge, Mass., for project management, architecture and technology consulting.

Many financial firms use the Internet and other on-line connections for personal finance, but Vanguard is one of the few that hasn't followed a proprietary route. Intuit, Inc. and Microsoft Corp. offer dialup connectivity to about 20 banks that use their separate personal-finance software packages.

Charles Schwab & Co. in San Francisco and tiny Trade/Plus, Inc. in Palo Alto, Calif., have software packages to trade stocks and securities through dial-up connections.

Vanguard's Bob DiStefano: 'You don't get to vote on whether you can play in this arena'

Electronic commerce

Price cuts lure 'net neophytes

Will influx deliver more business or clog up the works?

By Mitch Wagner

Users in consumer-oriented businesses say they are hopeful that recent price cuts for the Internet by major on-line services will bring a big wave of new visitors to their sites.

"The more ways there are to put people on the Internet, the better it is for Web-based services [such as] mine," said Jay Campbell, product manager for News-Page at Individual, Inc. in Burlington, Mass. The firm delivers on-line news reports.

But Keith Farrell, a senior vice president at General Media, Inc. in New York, said he fears a large influx of users would slow down the Internet.

High demand for data on the Internet already makes it difficult to download pages. General Media publishes *Penthouse*, *Omni* and *Longevity* magazines, which have sites on the World Wide Web.

Cutting the cord

CompuServe, Inc. early this month began to offer a flat-rate Internet-plan priced at $19.95 per month for unlimited usage. Next month, Prodigy Services Co. plans to launch a pilot program for pay-as-you-go Internet access in the New York metropolitan area.

CompuServe and Prodigy have launched an Internet pricing war

	Old pricing	New pricing
CompuServe	$4.95 for 3 hours per month*	$9.95 plus hours unlimited usage
	$9.95 for 7 hours per month*	
	$9.95 $0 or 20 hours per month*	
Prodigy	Web access through proprietary on-line service using proprietary browser	$1 per hour, no minimum charge, direct dial-up Internet access being sampled in New York City

*Each additional hour costs $1 per hour

The service will cost $1 per hour for dialup access with no minimum charge.

The Prodigy and CompuServe plans aren't the least expensive available. Many Internet service providers offer unlimited access for $15 per month; these are small, regional, typically little-known companies.

The Prodigy and CompuServe plans are the cheapest from well-known companies that offer national access.

As part of the Spry/net package, CompuServe in Columbus, Ohio, will offer users dialup and electronic-mail software and access to newsgroups.

The default browser will be CompuServe's Spry Mosaic, although users will have access to other browsers.

For Prodigy in White Plains, N.Y., the $1-per-hour program will be the vendor's first entree into fully functional, dialup Internet access using native TCP/IP protocols. The company offers access to the Web through its proprietary on-line service using its own Internet browser.

Prodigy will offer communications software from NCD Software Corp. that connects to the Internet using a Point-to-Point Protocol. The company also will offer Netscape Communications Corp.'s Navigator browser.

Officials at America Online, Inc. in Vienna, Va., said the firm doesn't plan any price changes for Internet access. AOL offers Internet access at $14.95 for 20 hours per month; $1.95 for each additional hour.

Briefs

O'Reilly upgrades Web server

O'Reilly & Associates, Inc. in Sebastopol, Calif. has released an upgrade to its World Wide Web server. WebSite 1.1, which costs $499, includes a HyperText Markup Language (HTML) editor and a management feature that lets users print a schematic of their Web sites that shows control locations and related links. WebSite 1.1 runs on Windows NT and Windows 95.

Cerfnet cuts prices

Cerfnet, a San Diego-based Internet service provider, recently cut its on-line access charges and sign-up charges were halved from $50 per month to $25. Hourly rates were cut 60%; 15 hours of service is $20 per month; $2 for each additional hour.

Add-ons for Netscape

Fifteen software makers recently unveiled add-on modules for Netscape Communications Corp.'s Navigator Web browser. The modules were built to conform to Netscape's "plug-in" application programming interface. Twinbrewed Software Corp. in Redwood City, Calif., for example, has created a document-publishing plug-in to let Navigator users view material

written in Novell, Inc.'s Envoy format without having to install a separate Envoy viewer. Other plug-ins include a tool for telling time around the world from Starfish Software in Scotts Valley, Calif. and one for viewing three-dimensional images from Paper Software in Woodstock, N.Y. A full list of new plug-ins is available at http://home.netscape.com/.

Web document exchange

Electronic Book Technologies, Inc. in Providence, R.I., has announced that it supports Standard Generalized Markup Language (SGML) in its DynaWeb Web publishing software. SGML is a superset of the more commonly used HTML. The feature was designed to let Web surfers exchange documents that are written in SGML.

SHORT TAKES Quarterdeck Corp. in Marina Del Rey, Calif., is shipping WebStar, a Web server that runs on Windows NT and Windows 95. It costs $399. . . . A security firewall is out this month from NEC Technologies, Inc. in Foxboro, Mass. It was designed to protect internal networks from invasions by outside Internet users.

Internet-connected phone calls dial in to lower prices

By Douglas W. Johnson

The lure of cheap long-distance telephone service is fueling something of a mini-stampede in the Internet-connected, on-line world.

Introduced to Windows-based PCs by VocalTec, Inc. early last year, software that allows real-time voice communications anywhere in the world over the Internet has put a gleam in the eye of rate-weary consumers.

Several competing Internet phone products are close to commercial release and will legitimize the field as a viable Internet service. But the reliability and quality of the typical Internet phone connection won't send any of the phone companies packing soon.

The most likely area of use is in the consumer market by people who make casual calls to relatives, especially overseas calls.

While the five products reviewed might contribute to a company's bottom line by reducing long-distance phone charges, these products probably will help businesses only in special circumstances and for less critical communications. It will likely be another story, however, as the products mature and Internet connectivity continues its penetration of business and home markets.

None of the packages interoperates with any of the others, which is akin to AT&T users not being able to call MCI or Sprint users. Only Cyberscience, Inc.'s CyberPhone has cross-platform capabilities (Linux, Microsoft Corp.'s Windows and Sun Microsystems, Inc.'s Solaris and SunOS), although VocalTec promises a Macintosh version. None of these products will work with America Online or Prodigy.

The packages were tested using a 28.8K bit/sec. modem connection to an Internet access provider. The PC used is a 120-MHz Pentium from Gateway 2000, Inc., which runs Windows 95 and is equipped with a 16-bit, duplex-capable sound card. A head-phone with attached microphone was used for all calls.

Installation and setup

Installation and configuration was straightforward in all cases. The most demanding task usually was ensuring that the sound card was properly configured so that full-duplex sound would be enabled. Without full-duplex sound, conversations sound like those held over CB radio.

A key aspect of each offering is how it initiates a call between two parties. Ultimately, the program must determine the IP number of the other party to be able to send voice packets. Most Internet access providers assign IP numbers dynamically, which means that users have a different IP number each time they connect to the Internet.

It is similar to having a different phone number every time you call someone. The two solutions in use are to contact a server to pass the IP information or use a direct connection where the IP is determined without a server. VocalTec's Internet Phone is server-based, while Third Planet Publishing, Inc.'s DigiPhone and Internet Telephone Co.'s WebPhone use direct connections. Cyber-Phone and Quarterdeck Corp.'s WebTalk can support both types of connections.

The server solution is easier to use and simply requires the selection of a listed user after connecting to the server. But the fact that you are listed on a public server is deemed an invitation to be called.

Establishing a private server solves this problem, and CyberPhone seems to be farthest ahead with this option.

Direct connections provide much more control over who may call you, but determining the correct IP address can be difficult.

The only program to address the issue directly, if not entirely successfully, is DigiPhone. It uses a unique locator approach that is based on electronic-mail addresses, but it can be slow and is handicapped because many corporate users have E-mail addresses that aren't directly related to the IP number on the machine they are using.

Quality and reliability

Sound quality was highly variable between calls within the same program and between programs. The products were disappointing compared with the standard telephone. Even though the packets for Internet and telephone may wend their way across the country on the same digital circuits, the telephone companies have a clear advantage in keeping them together for a natural, near delay-free conversation.

CyberPhone, Internet Phone and WebPhone typically gave markedly better quality connections than DigiPhone. WebTalk produced the least usable connections; my voice often was virtually unintelligible to the other party.

Overall, it was easier to get connected to another human being quickly with the server-based packages. CyberPhone, Internet Phone and WebTalk. Direct connections, however, would likely be easier to manage within a workplace setting where you can create your own phone book of correspondents and avoid "publishing" your number via the public servers. The higher band-width typically available to business users also should result in much improved sound quality with all the products.

Price

To be competitive, the Internet phone products have to offer some overwhelming advantage. Currently, that advantage is price. The cost of the call, even around the world, is just the cost of your Internet connection. This is often less than a dollar an hour, and sometimes much less, depending on your Internet provider.

For a class of product less than a year out of the starting gate, Internet phone programs promise to give the telephone companies a run for their money as quality and reliability improve.

The candidates

The following test phone packages were examined:

CyberPhone, Version 0.9
Cyberscience, Inc.
Hightstown, N.J.
http://magnets.com/cyberphone/
Price: $30

DigiPhone, Version 1.02
Third Planet Publishing, Inc.
Dallas
http://www.planeteers.com
Price: $59.95

Internet Phone, Version 3.1
VocalTec, Inc.
Northvale, N.J.
http://vocaltec.com/
Price: $80

WebPhone, Beta 3
Internet Telephone Co.
Boca Raton, Fla.
http://www.itelco.com/
Price: $49.95 (introductory);
$99.95 (manufacturer's suggested retail price)

WebTalk
Quarterdeck Corp.
Marina Del Rey, Calif.
http://www.qdeck.com/

FEBRUARY 19, 1996 COMPUTERWORLD

http:

Computer law

Electronic commerce paints a whole new picture for the legal system in the U.S. and worldwide. Who rules, and how? No clear answers exist, but you can brush up on what's legal and what's not — and what you can do to shape future regulations.

■ **Infobase**, a data mall run by electronic commerce pioneer First Virtual, offers views on how laws may shake out in several areas. For various fees, users can download detailed analysis on electronic data interchange ($24.95), authenticating electronic contracts ($5.95), the ins and outs of electronic signatures ($5.95) and other topics. See http://www.infohaus.com/access/by-seller/Infobase_Legal

■ **Yahoo** carries a nice list of law firms that handle computer issues at http://www.yahoo.com/Business_and_Economy/Companies/Law/Firms/. For lawyers who specialize in intellectual property cases, see http://www.yahoo.com/Business_and_Economy/Companies/Law/Intellectual_Property/Firms/

■ Got a question? Submit it to the Ann Landers of Web-based computer law at http://www.ittest.com/ittca.html. Users can get answers personally via electronic mail or publicly at the Web site.

■ The Information Law Web, at http://seamless.com/rcl/info-law.html, seeks to help you in "Understanding your rights in the information age." The searchable site is categorized by people (lawyers), places (links to sites with data on copyright law, for example) and things (legal documents and statutes) pertaining to electronic law.

■ Surf to the site of The Sixth Conference on Computers, Freedom and Privacy at http://www-swiss.ai.mit.edu/~switz/cfp96 to see what's on this year's agenda. Scheduled for March 27-30 at MIT, the meeting will tackle the topics of electronic commerce, freedom of speech and the new forms of illegal activity that the information highway enables.

■ Last but far from least, reread the U.S. Constitution. Emory University has kindly posted the entire document, complete with hot links to specific Amendments and Articles, at http://www.law.emory.edu/FEDERAL/usconst.html. Thomas Jefferson and the rest of the boys hadn't an inkling of the Web or E-mail, but they knew how to write law.

— Kim S. Nash

Computer law

The addition of voice mailboxes, conference calling and other staples of modern telephony will spice up the competition and continue to blur the separation between traditional telephone and computer-based audio.

Johnson is principal at DWJ Consulting Group in Stow, Mass. He can be reached at dwj@dwj.com.

FTP Software, Inc. has introduced Esplanade, a World Wide Web server for Windows NT server and workstation environments.

According to the Andover, Mass., company, Esplanade gives users integrated database connectivity tools, dynamic document

conversion and graphical server activity reporting tools. The reporting tools were designed to let administrators select from predefined reports or customized forms, company officials said.

Esplanade features a database connector, a server administration program that delivers database information to Web clients. The connector lets server administrators merge Open Database Connectivity-compliant database information with corporate webs so users can share information on any TCP/IP network.

Pricing for Esplanade starts at $445.
▶ *FTP Software*
(508) 685-4000

DeltaPoint, Inc. has announced WebAnimator.

According to the Monterey, Calif., company, WebAnimator is a multimedia software product for the Macintosh that lets

users animate World Wide Web pages. It includes tools to create animations, synchronize sounds and import photographs.

WebAnimator features storyboard tools and predesigned animated templates. The animations were designed to use small amounts of memory through vector-based drawings instead of bit-map paintings.

The product includes a Netscape Communications Corp. Navigator plug-in player that lets users who don't have WebAnimator view an animated scene after they download the file.

WebAnimator costs $295.
▶ *DeltaPoint*
(408) 648-4000

Object Power, Inc. has introduced Openscape Pro, a World Wide Web page product.

According to the Cambridge, Mass., firm, Openscape Pro is a point-and-click tool that lets developers build Web pages that access enterprise servers. It uses desktop tools, including OLE custom controls to build Web components that can communicate with high-performance enterprise servers in a secure environment that is based on the Data Encryption Standard.

The product lets Web pages access the Netscape Communications Corp. application programming interface, external Dynamic Link Libraries and OLE servers. These interfaces provide two-way communication with external processes and servers from Web pages.

Openscape Pro components are compatible with OLE and may be dragged and dropped from Netscape into any OLE-enabled desktop environment.

Pricing for Openscape Pro starts at $145 per desktop.
▶ *Object Power*
(617) 876-0038

The Library Corp. has introduced NlightN, a universal search engine for the World Wide Web.

According to the Reston, Va., company, NlightN offers more than 2 billion searchable key words and 86 million subject headings. It integrates hundreds of information sources, including Internet documents, public and private databases, international news wires and reference works.

NlightN is free. More information is available at http://www.nlightn.com.
▶ *The Library Corp.*
(703) 904-1010

Corporate Strategies

Going to the next level

Oshman's Sporting Goods made advances in credit-card and check authorization when it began opening superstores.

Retailer speeds credit-card authorization

By Thomas Hoffman

Retailers don't like making their customers wait in line to spend money, and Oshman's Sporting Goods is no exception. Faced with sometimes unduly long waits for credit-card approvals, Oshman's has installed new modem-crunching software — and improved its authorization time by up to 90%.

The problem peaked during the Christmas 1993 season. "We had customers who had merchandise completely rung up in bags who were standing around waiting while the clerks were staring at the registers," said Donna Feil, Oshman's point-of-sale (POS) project manager.

The issue began to surface when Houston-based Oshman's began opening superstores in 1990. The traditional stores — which were 10,000 to 15,000 sq. ft. in size — were each supported by three Fujitsu Ltd. 7770 POS registers, which were tied into Fujitsu 7990 "master" registers. Up to five 7770s could be strung together on the same dial-up line for credit-card and check authorizations without any communications degradation.

But that changed with the launch of the superstores. These 50,000- to 100,000-sq.-ft. warehouse-type stores each need 22 POS systems, which require four to six Fujitsu 7990 master registers. And under this scenario, only one of five cashiers can

Retailer, page 64

ATM answers bandwidth crunch

By Neal Weinberg

A company runs private T1 lines between four campuses in a 15-mile radius for data and voice traffic. The company is running out of bandwidth and embarking on a major construction project. It decides to:

A) Upgrade its network from T1 to T3 speeds.
B) Switch from private leased lines to public frame relay.
C) Convert to ATM, or Asynchronous Transfer Mode.
D) None of the above.

After plenty of late-night chatting, the Educational Testing Service (ETS) chose (C).

ETS, the company that administers some 2 million Scholastic Aptitude Tests a year, is installing an ATM backbone at speeds that range from T3, or 45M bit/sec., to OC-3, or 156M bit/sec. The upgrade represents a vast improvement over the current T1, or 1.5M bit/sec., network.

The real immediate benefit is pure bandwidth," said Kevin Birmingham, director of network services.

In the future, ETS could handle videoconferencing over the same ATM connection, but its current concern is finding a more efficient way to move the voice and data for it already has.

Chief Information Officer Rich-

CIO Richard Formicella and ETS saved $800,000 by choosing ATM over T3 leased lines

and Formicella said it would have cost ETS $1.6 million to upgrade its point-to-point multiplex system to a T3 network. Instead, the ATM backbone costs $800,000.

But while the multiple choice answer was clearly ATM, Formicella said his company still had to overcome the fear factor associated with moving to a new technology. He said he asked himself, "Are we brave enough?"

Maybe. But to hedge its answer a bit, ETS decided to outsource the design, deployment and management of the network to Bell Atlantic Network Integration (BANI). BANI is currently testing and configuring the ATM switches from IBM.

Once the network is up and running, BANI will manage it from a remote location near Philadelphia, by using IBM's NetView/6000 platform.

The impetus for ETS to upgrade its system was a combination of bandwidth constraints and a construction project that includes porting the ETS data center to a building six miles from the main campus in Princeton, N.J.

"We were running out of capacity for the traffic types we had," Birmingham said. Those include Ethernet and SNA traffic.

The construction project created the opportunity to restructure the network, Formicella added.

"The time was right for them to go ATM," said Arthur G. Dolumpio Jr., program manager at BANI.

Decision-support software cuts loan processing time

By Julia King

Imagine securing approval for a home mortgage loan in about the time it takes to get a pepperoni pizza.

That's the goal of Leading On Pathway, an application that is part of a multimillion-dollar client/server initiative at B4.1 billion (U.S.) Bank of Montreal.

Scheduled to go live in October, this object-oriented application is intended to compress the mortgage loan approval process from the current 24 hours to about 12 minutes.

It does this by automating many of the decisions now made by human underwriters. Where a person looks over a combination of paper-based applications and on-line credit bureau files to establish an applicant's credit worthiness, the system analyzes this information and weighs it against predefined lending criteria.

In a four-month pilot test, the average time it took the system to issue a decision — once all data was piped into the system — was 30 to 45 seconds, said Jane Weatherbie, the bank's Toronto-based vice president of personal lending services.

"The pilot was a proof of concept. The idea was for a customer to call in, we'd take the application, and by the time the conversation was finished, they'd have an approval," Weatherbie explained.

During the pilot, more than 350 mortgages were processed — and the bank's booking ratio increased.

Decision-support, page 64

Retailer speeds credit-card authorization

each string could launch a credit-card authorization at one time. Other cashiers and their customers had to wait for the first transaction to clear before their credit checks could be sent.

Slow credit authorization response rates are a problem that many retailers are trying to solve. "There's been a lot of talk about using [Asynchronous Transfer Mode], but not too many companies can afford this," said Michael Smith, a communications analyst at Datapro Information Services Group in Delran, N.J.

Oshman's considered replacing its Fujitsu hardware with new POS systems that could be strung together on a single telephone line. But that would have cost $5,000 per terminal, or more than $100,000 for each superstore, Feil said.

Instead, Oshman's in 1994 installed Harmonic Systems, Inc.'s Retail Integration Module software. The software takes over the call setup function of each master terminal and uses fast-synchronization modem technology to conduct multithreaded data transfers in a fraction of the time it took before.

Oshman's also began routing all credit-card and check authorizations through MasterCard In-

ternational, Inc.'s MAPP MerchantNet service. The retailer did this by using a Harmonics Enterprise Gateway Processor, an IBM RS/6000 machine that is equipped with a router and modem, connected to a T1 line.

Oshman's had the Harmonics systems in place by October 1994 and was able to reduce its credit authorization response times to 10 seconds during the holiday shopping period that year. That was a 90% improvement from its previous setup. Since then, Oshman's has been able to reduce its dialup phone charges by 20%.

By Thanksgiving 1995, the retailer had rolled out new POS software to 95% of its outlets.

Further improvements

Oshman's is working on improving its credit authorization response times beyond its six-second rates. This month, it is setting up a direct connection between its gateway processor and American Express Co. and Telecheck Services, Inc., also in Houston. That is expected to save the retailer an additional $250,000 in authorization fees, Feil said.

He placed the retailer's return on investment for the Harmonics systems at 18 months.

Read all about it
From basic Win 95 to disk dictionary

> ► *Bulletproof Documentation —
> Creating Quality through Testing*
> by Dorothy Cady, McGraw-Hill,
> Inc., 312 pages, $45.

The central premise of this book is that bad or erroneous computer documentation costs companies big-time. End users take longer to cash on, and both user and vendor firms end up paying more because support does, too. Good documentation is grounded in feedback from ultimate end users, Cady asserts, so she's written a step-by-step guide on how to test the stuff before it's cast in stone. This book assumes the reader will already know how to create basic documentation; it simply helps test and change what's already created.

This is a fairly handy guide to Windows 95 and PCs in general for someone who's never seen a computer, someone who's been using one for six months, or an executive who knows how to do

two things on a PC but yearns to know more.... OK, you get the point. This book is really, really basic. One section takes the reader through the internals of a PC, another explains how to choose a PC that meets your needs, and another defines various types of software. One example: "Game software turns your personal computer into a toy, an amusement park or a fun-filled learning tool." But it does have some handy tips for manipulating files and doing other tasks under Win 95.

> ► *The IBM Dictionary of Computing on Disk*, McGraw-Hill, Inc., $54.95.
> This 18,000-term dictionary, now in its 10th printing, is on disk for the first time. It consists of four disks that run under DOS or Windows 3.1 with full search features, they require at least 5M bytes of hard disk space. The dictionary defines everything from "baud rate" to "WORM" and includes IBM-specific definitions as well as generic terms. A CD-ROM version is expected soon.

— *Johanna Ambrosio*

> ► *Field Guide to PCs with Windows 95*, by Stephen L. Nelson, Microsoft Press, 289 pages, $9.95.

Decision-support helps bank

Humana need still apply

Most large lenders are using or developing automated underwriting capabilities, but none see technology as a replacement for human underwriters, according to The Tower Group. Instead, the systems function more as workflow engines, which automatically approve clear-cut applications while routing only the more complex cases to human beings.

by 20%. Now the bank is pushing the application to its 1,200 branches.

Object-oriented underwriter

At the heart of Bank of Montreal's application is an automated decision-support engine, which essentially acts as a computerized underwriter.

Developed by American Man-

agement Systems, Inc. in Fairfax, Va., the engine is object-oriented software. It simultaneously analyzes the financial data from applicants, on-line information from credit bureaus and customer data from a data warehouse.

The software resides on a Sybase, Inc. relational database management system that runs on an IBM RS/6000. It lets users perform what-if analyses, such as manipulating terms and loan amounts to determine what best suits a customer's needs.

Weatherbie said the bank intends to tap much of the same data warehouse and decision-support technology that is used in the Lending On Pathway application to push other kinds of loans and services.

"As we populate our credit warehouse, we'll be able to branch out and do much more sophisticated predictive modeling," she said.

"We'll be able to look at customers' activities and what they tell us about their needs."

Quick, warm and fuzzy

W hen customers call in to the Bank of Montreal's streamlined home mortgage loans, bank staff at OSJ-2-based workstations input the applicant's data in English as a series of graphically oriented screens developed in Smalltalk.

Unlike the previous and more rigid forms-based interface, the Smalltalk screens can be easily negotiated in any order.

During the application interview, "We can jump between assets and liabilities for a husband and wife. The system is also so easy that you can be using it [and] still converse with a client," said Frances Bullent, a project coordinator who used the system during the four-month pilot.

This may seem like a minor point, but a conversational tone and approach gives customers a warm-and-fuzzy feeling about the bank — and that can translate into more business.

— *Julia King*

Briefs

IBM drops lease rates
IBM Credit Corp. is offering financing rates as low as 5.9% on new leases of all IBM networking products and selected RS/6000, RS/6000s, PCs and storage products.

ISSC, Ameritech tie the knot
Integrated Systems Solutions Corp. and Ameritech Corp. have entered an alliance to provide desktop management and LAN management services to joint customers in Ameritech's five-state region (Illinois, Ohio, Michigan, Indiana and Wisconsin). The venture was designed to give users a single point of contact for desktop, videoconferencing, private branch exchange, telephones and other local-area equipment. It will eventually be offered to customers throughout the U.S. As part of the agreement, Ameritech has outsourced management of its 35,000 desktops to ISSC. Similarly, ISSC has Internet out management of its local telecommunications gear to Ameri-

tech under a $400 million deal between the two firms.

Excellent Ernst
Ernst & Young is the winner of SAP America, Inc.'s annual Award of Excellence for an SAP software systems integrator. The award, which is given out annually, is based on evaluations by executives at companies that are implementing SAP software. Ernst & Young's SAP clients include Yamaha Motor Corp. USA and Steelcase Corp.

ACS gets contracts
Dallas-based outsourcer Affiliated Computer Services, Inc. has recently landed two contracts. GATX Capital Corp., a financial services company in San Francisco, will migrate from a legacy system to a client/server environment based on SAP R/3. ScrippsHealth, a major health care provider in San Diego, will turn over management of certain data center components to ACS.

Insurer prepares for year 2000
Metropolitan Life Insurance Co. in New York has tapped Peritus Software Services, Inc. in Billerica, Mass., to convert its programs to accommodate the year 2000 changeover. On Jan. 1, 2000, dates in many computer programs will cycle to 01/01/00 and interpret this as the first day of 1900.

Domino sweet on SCT
Domino Sugar Corp. in New York has licensed Systems and Computer Technology Corp.'s Adage enterprise resource planning (ERP) software for use in its U.S. facilities. Adage is an object-oriented ERP system designed for food and beverage and other process industries by the Malvern, Pa., software developer and outsourcing vendor.

Intergraph enters Japan
Intergraph, Inc. in Rockville, Md., recently said it will establish a business unit in Japan. Intergraph Japan's first task will be to build a joint venture with Deloitte Touche Tohmatsu, a consulting and accounting firm.

Hawaiian shirts

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GA	Atlanta	4/11
IL	Chicago	4/23
LA	New Orleans	4/17
PA	Philadelphia	4/3
TX	Houston	4/2
May		
AZ	Phoenix	5/30
CA	Irvine	5/15
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IN	Indianapolis	5/8
MA	Boston	5/14
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Key topics to be explored include:

DATA WAREHOUSING

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HOT HAPPENINGS

April to June 1996

What with having to shovel the driveway 103 times and crawl around the attic looking for ice-dam damage, folks in most parts of the country probably haven't thought much about spring. (Then again, many have probably thought about it plenty — in a Jack-Nicholson-in-*The-Shining* sort of way.) But spring will indeed spring this year. And if you play your cards right, maybe you can get the folks in Accounting to spring for a trip. To that end, here are some Hot Happenings for April, May and June.

NETWORLD/INTEROP 96

April 1-5, Las Vegas

Attendees can look forward to the weather, the gaming tables and lots of new switching products and Asynchronous Transfer Mode devices. Networld/Interop actually is a show within a show. It is one of the best venues in which Apple, glitter and scantily clad booth hostesses are still very much in evidence.

GOOD FOR: Network professionals and managers

SPEAKERS: Microsoft Corp.'s Bill Gates; Novell, Inc. Chairman and CEO Robert J. Frankenberg; John W. Gerdelman, president of network services at MCI Communications Corp., and others

The real action will go on behind closed doors, as top industry executives wheel and deal with their peers. Expect lots of alliances and technology swaps to be announced after the show by companies such as Cisco Systems, Inc., 3Com Corp., Cabletron Systems, Inc. and Fore Systems, Inc.

FEES: $899 to $1,990, depending on the number of days attended. Multiple-attendee and early registration discounts are available.

CONTACT: Softbank Exposition and Conference Co., Foster City, Calif., (800) 468-3767; or contact mtrask@sbexpos.com

Viva Las Vegas! Visitors can expect to see a lot of behind-the-scenes action at Networld/Interop '96

AFCOM SPRING

April 14-18, Chicago

AFCOM.

The Association for Computer Operations Management's get-together is for those who do the heavy lifting in data centers. More attention is paid to midrange systems and client/server computing in this former mainframe bastion. A highlight is the Data Center Manager of the Year Award. It recognizes a manager's contribution to overall corporate success.

GOOD FOR: Data center managers

FEES: $695 to $945 for AFCOM members; $850 to $1,100 for nonmembers. Discounts for multiple attendees are available; fees are different for non-U.S. attendees.

CONTACT: AFCOM, 742 E. Chapman Ave., Orange, Calif., 92666. For information, call (714) 997-7966. Telephone registrations aren't allowed.

Paulina A. Smith, manager at the Standard Bank Eastern Regional Processing Center, Defense Megacenter Warner Robins, was AFCOM's 1995 Data Center Manager of the Year

▶ **LOOKING TO TIE IS SPENDING TO CORPORATE PROFITS? PAUL A. STRASSMANN SAYS DON'T HOLD YOUR BREATH. TURN TO PAGE 72.**

DB: EXPO '96

April 15-19, San Francisco

The use of database management systems on the Internet and intranets will be a primary focus at the conference.

Check out Internet Village, a 3,000-sq.-ft. multivendor exhibit at the back of the hall, where users can browse the Internet for free. An entire track on the 'net has been added this year.

And here's a scoop you won't find in the brochure: Top database executives from Microsoft Corp. and IBM will face off about the future of enterprise computing.

GOOD FOR: Database administrators, developers and end-users; information technology staff and executives, developers and administrators of Internet or intranet sites

FEES: $495 to $1,995, depending on package. Multiple-attendee and early registration discounts are available.

CONTACT: Blenheim NDN, Mountain View, Calif., (800) 232-3976, or DBEXPOSF@BLEN-USN.MHS.COMPUSERVE.COM

OBJECT WORLD EAST

May 5-7, Boston

Would you like to make email talk with National Rose? OD on Oberon? Or initialize Java?

Then come to Object World East in Boston and acquaint yourself with the leading object-oriented languages, development environments and Common Object Request Broker Architectures.

It's objectic galore at a show that closes in the East and reopens itself later in the West at San Francisco's Moscone Center.

There is a Computerworld/Object Management Group-sponsored contest for Best of Show offerings in several categories, followed by awards, drinks and hors d'oeuvres on the show floor.

It's where the object cognoscenti meet to eat, drink and make mean distributed programs.

GOOD FOR: Systems development managers, object-oriented engineers, project managers

SPEAKERS: Sanjay Kumar, president and Extended Intelligence, Inc.; Carma McClure, vice president of research, Extended Intelligence, Inc.

FEES: $400 to $1,200; early registration discounts are available

CONTACT: Object World, Framingham, Mass., (800) 241-6000. Web site: http://www.ow.com/ow/objwrl.html

SOCIETY FOR INFORMATION MANAGEMENT EXECUTIVE TECHNOLOGY SUMMIT

April 24-26, Rancho Mirage, Calif.

The summit brings together CIOs and high-level IS managers for a no-holds-barred exchange of tactical and strategic solutions to thorny technology management and business problems. This year's theme, "Guiding the Distributed Enterprise," will challenge participants to examine today's business drivers: globalization, heightened customer expectations and ever-shorter product cycles.

First year's event is any indication, expect little or no slideware. There will be a lot of dialogue among panel members and sophisticated audience members, who take on prisoners in their quest for business and technology folks. Vendor-hosted theme parties, possibles and too lines provide a wonderful atmosphere for networking, learning from colleagues and enjoying some time out of the shop to decompress and regenerate brain cells.

GOOD FOR: Chief information officers and high-level information systems executives

FEES: $760 to $895

CONTACT: ATI Travel Management, Inc., Chicago, Ill. For more information, call (800) 477-8920 or (312) 644-6642 if you're calling from the Illinois area.

ASSOCIATION FOR SYSTEMS MANAGEMENT (ASM) IS CONFERENCE

May 5 to 7, Nashville

Mainframe folks get together to talk big iron. Most attendees have been moved on mainframe technology, but are interested in bites about moving to distributed, networked, client/server computing.

GOOD FOR: Mainframe IS managers

FEES: $495 to $695; early registration discounts are available

CONTACT: ASM, Cleveland, Ohio, (800) 203-3657

COMMON

April 15-19, San Francisco

By IBM's choosing, the AS/400 may no longer be in a class by itself. The venerable minicomputer is being geared up with RISC microprocessors and made more Unix-like in an attempt to keep it from going the same way at most venerable minicomputers — into the pages of history.

For now, the AS/400 retains a subculture fad, and Common is the user manifestation of that subculture.

Thousands of users will descend on the spring conference to swap stories about whether the RISC migration is going more smoothly than IBM's long-plagued release of an operating system revamp last year.

There will be technical sessions galore, and there's another very good reason to attend the Common conference: It's in San Francisco.

GOOD FOR: Users of IBM midrange systems

SPEAKERS: Paul Gillin, editor of *Computerworld*, will speak at the opening session.

FEES: $225 to $550, depending on the number of days attended. Multiple-attendee and early registration discounts are available.

CONTACT: Common, Chicago, (800) 777-6734; or common@common.org

Attendees can expect to be immersed in things objective at the Boston show

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HOT HAPPENINGS

DECUS

June 1-6, St. Louis

This show is part education, part trade show, part social reunion and part Town Meeting-style assembly of users pressing the flesh with Digital representatives. The semiannual sessions of the Digital Equipment Computer Users Society (DECUS) in recent years have reflected the fortunes of the vendor: declining attendance. User-group leaders hope to bounce back this year, just like Digital.

Historically dominated by OpenVMS crowd — 15 professionals who cut their programming teeth on VAXes — this year's meeting is expected to reflect a more multicultural flavor with more discussion about their systems, according to group leaders.

Even so, it will be time once again to hear a progress report from the VMS gurus at Digital about the ongoing program to integrate Windows NT applications with OpenVMS servers.

GOOD FOR: Users of Digital Equipment Corp. systems

FEES: $150 to $795, depending on the number of days attended

CONTACT: DECUS, (800) 332-8755, or information@decus.org; World Wide Web site: http://www.decus.org/

IDUG NORTH AMERICAN CONFERENCE

June 2-6, Dallas

IDUG is DB2 country, pure and simple; an Oracle or a Sybase word is never heard. Well, not exactly. Many of the DB2 database administrators who attend must contend with fragmented environments in which user departments fuel their muscles and choose Oracle Corp., Sybase, Inc. or other alternatives to IBM's relational technology.

You can get tips on dealing with that situation from your peers, and IBM will try to explain its strategy for making the client/server versions of DB2 worthy rivals to the better-established Unix databases.

There's also a product exhibit where you can hound tools and utilities vendors about their plans for supporting DB2 for Unix. And lest we forget, mainframe DB2 still gets a lot of play as well.

GOOD FOR: IBM DB2 database administrators

SPEAKERS: Mark Ryan, lead of the database team for the Atlanta Committee for the Olympics; Roger Miller, DB2 expert at IBM's Santa Teresa Lab

FEES: $1,145 to $1,345; multiple-attendee and early registration discounts are available

CONTACT: IDUG, Chicago, Ill., (312) 644-6610, or 72410.5514@compuserve.com; Web site: http://www.idug.org

WINDOWS WORLD

June 3-6, Chicago

The Windows World Spring conference usually is held in Atlanta, but Chicago is the venue this time. So be prepared for lait buildings and packed booths at the second biggest Windows show of the year. Whether your chief interest is Windows 95, Windows NT or the applications and hardware they run on, this is the place to be.

Chicago, Atlanta — it doesn't matter. For worshipers of Windows and Bill Gates, it's like making the pilgrimage to Graceland. The show has more than 100,000 attendees, with developers, merchandisers and vendors of all shapes and sizes. It even includes a laymain address by the man himself — Gates, that is, not Elvis.

GOOD FOR: Windows 95 and Windows NT developers, managers and resellers

FEES: Not available

CONTACT: Softbank Comdex, Needham, Mass., (617) 433-1600; Web site: http://www.comdex.com/

Computerworld staff members Alan Alper, Allan E. Alter, Charles Babcock, Stewart Deck, Laura DiDio, Michael Goldberg, Stuart J. Johnston, Julia King, Dan Richman, Craig Stedman and Jaikumar Vijayan contributed to this report.

WEB WORLD • E-MAIL WORLD • MOBILE WORLD INTERNET EXPO

June 11-13, Chicago

Chicago will attract a throng of hip techies as Web vendors, managers and aficionados converge. Look for the mass media to poster attendees with serious questions about What It All Means. Wonder if the PC knows about the cartels; the smug combination of beepers, cordless telephones and portable PCs could cause train wrecks and an embarrassing guided-missile incident.

GOOD FOR: Managers in Internet and portable-computing environments

FEES: $995 for core conference. Fees vary, depending on conferences and seminars attended; multiple-attendee discounts are available.

CONTACT: Digital Consulting, Inc., Andover, Mass., (508) 470-3880, or ConfReg@dciexpo.com; Web site: http://www.DCIexpo.com/

PC EXPO

June 18-20, New York

Products, demos, hot technology — PC Expo should have something for almost everyone

FEES: $115 to $50; early registration discounts are available

CONTACT: Blenheim Group USA, (800) 829-3976

Here's the New York version of Comdex for people who hate going to the real thing. The Jacob Javits Center is becoming an annual target for thousands of PC buffs from around the country and, increasingly, around the world. The big cheese (and hundreds of smaller guns) of the PC industry will give visitors a window on emerging technologies.

Expect acres of vendor stalls that display the latest and greatest hardware, software, chips, multimedia and emerging technologies. Some advice: If you haven't rented a car and your hotel is within walking distance, with it beats spending hours hailing cabs.

Computers don't make money. People do.

Yes, computers add value, but give the skeptics their due. The relationship between computer expenditures and corporate performance is neither simple nor direct.

The magical incantations that computers deliver competitive gains, increase customer satisfaction, offer superior quality and improve profitability are repeated so often that they've been generally accepted. Otherwise, how could U.S. corporations continue to spend more money on computers than on any other investment?

But there are always skeptics in corner offices who search for solid evidence that computers really do increase profits.

As a chief information officer for 32 years, I've known quite a few of those skeptics personally. Management has insisted that I come up with proof that my expenditures resulted in improved financial results. While searching for such proof, I became skeptical myself about the relationship between computerization and profitability.

Gathering evidence

When I was CIO at Xerox Corp., I was able to get reliable data about computer budgets, business indicators and financial results from more than 50 operating divisions worldwide. These units competed with identical products, against identical competitors and in different regions. But the financial results for each operating unit varied a great deal even though their computer budgets and technologies were quite similar. My analysis in 1974 revealed there was absolutely no relationship between computer budgets and profits. Information technology was important but certainly not a key to profitability as many had claimed.

After that experience, I spent seven years gathering data from other firms to see if they behaved the same as Xerox operating units. I published in 1985 a scatter diagram that displayed profit performance for 84 companies as it related to their computer expenses. There seemed to be no connection between computer spending and financial results.

By 1990, I had assembled data from 292 enterprises; I had collected the data while I was engaged in consulting work. I published a diagram that showed a random scatter pattern between computer budgets and returns on investment. Most computer people and quite a few academicians didn't know what to make of it; my results didn't confirm what was expected.

One of the objections to my find-

ings was that the data was obtained as a byproduct of my consulting practice and that only troubled firms would seek advice about their budgets. Others asserted that concealing evidence about the benefits of computers would take longer to reveal itself. Analysis based on data gathered in the 1980s was premature, they said.

No correlation

The chart below reflects 1994 financial results and operating statistics from 500 U.S., European and Canadian firms. These findings certainly aren't "premature" after 40 years of the computer era. The data originates from a statistically unbiased sample and is drawn mostly from public sources.

After 20 years of research, I have found that computers indeed add a great deal of value to well-managed companies. But computers aren't an unqualified blessing. Identical machines with identical software will make things worse if the enterprise is mismanaged. The proof of these assertions is that computer expenditures and corporate profits show no

correlation whatsoever, and it is unlikely that any such relationship can ever be demonstrated. Computers are only the catalysts. Businesses values are created by well-organized, well-motivated, knowledgeable people who understand what to do with the information that shows up on computer screens. It would be too much to hope that such a phenomenon is a universal characteristic of all businesses.

Computer people — and skeptical general managers — must recognize that the fortunes of a corporation are shaped entirely by the 25% of the revenue that is consumed by management to manage the enterprise, coordinate suppliers and influence customers. Computerization accounts for less than one-tenth of that total cost.
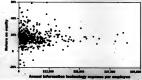
It's absurd for a CEO, chief operating officer or chief financial officer to demand that the CIO prove simply and directly how computer budgets relate to profits. The best that computerization can deliver is to make management more effective. Until robots can completely automated businesses, the relationship between computerization and profitability is doomed to be little more than a random scattering of dots. ■

Strassmann served as CIO of major organizations beginning in 1961. He can be reached at paul@strassmann.com or http://www.strassmann.com/.

Paul A. Strassmann

Revealing Indicators

No pattern of profit

Looking for a direct correlation between information technology spending and corporate profitability? Forget it. In this scatter diagram, the dots form a messy clump that peters out along the vertical and horizontal axes. Companies that have spent more per employee for information technology don't necessarily show a greater return on equity than the firms that spent less. If return on equity increased as expenditures increased, the dots would stretch out in a line that rises from the lower left corner to the upper right corner of the chart.

Return on equity

Annual information technology expense per employee

$12,000 $25,000 $37,500 $50,000

SOUND OFF!

AT ISSUE: *U.S. legislators say they want to enact laws to protect children from on-line pornography and weirdos. Civil libertarians think the Internet may become the most heavily censored and regulated form of expression in the U.S. Can civil protection and freedom of expression coexist on the Internet? Sen. Jim Exon, co-sponsor of the recently passed computer pornography act, takes on Marc Rotenberg, privacy crusader.*

INTERNET
How far should

ONLY THE FORCE OF LAW CAN DETER PORNOGRAPHERS

By Sen. Jim Exon

Children and families won an important victory in Congress on Feb. 1.

The Telecommunications Deregulation and Reform Bill, which includes the Exon-Coats Communications Decency Act, was passed by the Senate and House. Congress agreed that we need to take reasonable steps to protect children on the information superhighway instead of simply handing the keys of our homes to pornographers.

Some basic rules of the road are necessary to make the information superhighway safer and more useful for children and families.

Because our legislation follows previous court rulings, it won't violate the First Amendment. It makes clear that current obscenity laws apply to computers. It protects users from on-line harassment and prohibits the use of a computer to lure children into illegal sexual activity.

The legislation also provides for compliance through the good-faith use of "reasonable, effective and appropriate means" to restrict children's access to indecent or pornographic material.

The Communications Detency Act could help to ensure that our kids have

a chance to travel safely through cyberspace and would still let adults access whatever legal material they choose. It would apply to computers the same antipornography laws that exist for U.S. mail, broadcast and telephone communications. The legislation focuses clearly on wrongdoers.

If someone let a child browse freely through an adult bookstore or an X-rated video arcade, I suspect and hope that most people would call the police to arrest that person. Yet these very offenses occur every day in America's electronic neighborhoods. A child can get on the information superhighway and freely ride to on-line "red light districts" that contain some of the most perverse and depraved pornographic material available.

The Supreme Court has said repeatedly that Congress may act to protect kids from indecency.

A recent FBI sting operation resulted in the arrest of several people nationwide for distributing child pornography over computers, which shows that some of our child pornography laws also work in the world of cyberspace. But we need more legal tools to

Exon, page 76

In Depth

PRIVACY:

federal regulation go?

THE 'NET
DOESN'T NEED
THOUGHT POLICE

By Marc Rotenberg

A copy of *The Naked Society* sits in my office. Some people might think it is a collection of dirty pictures. Not at all.

It's a book written by Vance Packard, the author of three national bestsellers, about the growth of surveillance and the loss of personal freedom. Packard used "naked society" to describe how new technology strips us of our privacy. The book begins with a quote from a famous judge and ends with the Bill of Rights.

Now give some politician the ability to do a global search and delete, and I have little doubt that all electronic copies of books such as *The Naked Society* would be erased overnight from the Internet.

Think I'm exaggerating? Here's what happened when Bavarian prosecutors told CompuServe, Inc. to pull the plug on newsgroups with "sex" in the title. The fan club for Patrick Stewart, the actor who plays Capt. Jean-Luc Picard on *Star Trek* and does an excellent one-man performance of *A Christmas Carol* at holiday time, got zapped. The reason? The newsgroup is alt.sexy.bald.captains. Also knocked

off the 'net by zealous thought police was a support group for disabled people (alt.support.disabled.sexuality) and a parody of an annoying children's television character (alt.sex. bestiality.barney).

Of course, censorship isn't just about sex. The Chinese government recently told Reuters and the Dow Jones News Service that they could no longer provide economic information to the country without government approval. Why? To protect economic security. And the government of Singapore continues its campaign to ensure that speech is sanitized before it reaches the minds or hearts of its citizens.

The U.S. is getting drawn into this craziness because religious zealots and their allies in Congress have decided they know what is good for us and our children. Telling others what they should read, think or believe is about as un-American as it gets. But through the Exon-Coats Communications Decency Act, which recently passed as part of the Telecommunications Deregulation and Reform Bill, such nonsense has become the law.

Supporters of this act say it's noth-

SOUND OFF!
INTERNET PRIVACY

Exon

deal with this type of problem before more child victims are lured into pornography. Our law will shield children from pornography that is only a few clicks away on their computers and make it illegal to engage children in sexual conversations online.

It will impose penalties on people who transmit pornographic material via computer networks that are accessible to children. The maximum penalty for such an offense would be up to two years in jail and a fine of up to $250,000.

Don't let opponents of the legislation fool you. Nothing in it applies to constitutionally protected speech between consenting adults. It simply says a person can't use a computer to transmit or display indecent material in a way that is openly accessible to a person under 18 years of age.

This law will be enforced the same way as our existing pornography laws. If someone files a complaint, law enforcement will investigate. Federal priva-

Our law will shield children from pornography that is only a few clicks away on their computers.

cy laws haven't been repealed. "Cybercops" won't surf the 'net to look for violators. Indecent communications simply must be conducted in a place that is out of reach for children.

Access for children can be restricted in several ways, including requiring use of a verified credit card, debit account, adult access code or adult personal identification number. The Supreme Court already has approved such means for limiting child access to telephone "dial-a-porn" services.

Parents, schools and a responsible industry still must be involved in the effort to make the Internet safer. But does anyone really think that parents can monitor their children all of their waking hours? We need the added deterrent of law so that those who would pervert the network will think twice.

Our legislation has steered the industry toward developing possible blocking devices, and we applaud those efforts. Unfortunately, expensive and complicated screening devices alone don't hold enough hope of adequate success.

Opponents forsake reason when they say they want to protect children from indecency, seduction and harassment but maintain that the overriding issue is freedom of access to anything by anybody. Tell that to a parent who has had a child lured away by a deviant on a computer network. Hardly a day goes by without another story about the mix of depravity and children on the 'net. How many more are never reported?

'net protection

We have laws against murder, and we have laws against speeding. We still have murder, and we still have speeding. But I think most reasonable people would agree that we very likely would have more murders and more speeders if we didn't have laws as deterrents.

This measure won't make the Internet pristine, but it will help protect our children.

There is too much of the self-serving philosophy of the hands-off elite. They seem to rationalize that the framers of the Constitution plotted to make certain that the profiteering pornographer, the pervert and the pedophile be free to practice their pursuits in the presence of children on a taxpayer-created and subsidized computer network.

That is nonsense.

Rotenberg

ing more than old-fashioned regulation of TV and radio. Anyone who uses the 'net knows that's completely wrong. (Not surprisingly, a sponsor of the Communications Decency Act proudly proclaims he doesn't use the 'net.)

Regulating the Internet isn't like regulating radio or television. No World Wide Web site operator is licensed. No scarce spectrum is used. Regulating speech on the Internet is like telling bookstore owners, newsstand operators and librarians which books to stock and which magazines to sell. It's like the government telling people who use the telephone which words they can use.

Supporters of the legislation say it will protect children from the evils of dirty pictures. That's crazy, too. Young kids aren't interested in dirty pictures. Like all campaigners against sexuality, all the publicity-seeking moralists have accomplished is to splash the stuff they most fear across the front pages of the nation's newspapers. They might as well put a blinking arrow on top of the Playboy home page and say, "Don't look here!"

Of course, parents should be free to select materials that are appropriate for their children, and Internet users should be able to reject material that is objectionable. If you really don't like an on-line service's policy or content, cancel your membership.

But be careful when people tell you which words you can speak and which books you can read. Once they start drawing lines, they rarely stop. Parody, criticism, satire, adult conversation, literature and art all would become suspect.

The legislation gives federal investigators the right to comb through Web sites, newsgroup posts and even private electronic mail to find evidence of indecent speech. Use a word that someone doesn't like, and you could get thrown in jail. The idea that federal investigators might even have the right to open private E-mail if it suspects the message contains offensive language. Planning becomes a criminal offense.

Political leaders in the U.S. should stand up against the thought police, not join their ranks.

The supporters of government censorship will say they don't intend to eliminate the acceptable stuff, just the bad stuff. And that's exactly the problem the First Amendment was designed to avoid. It gives us the right and the responsibility to decide for ourselves what is objectionable and what isn't. It forces us to make choices when we are confronted with controversial ideas and new viewpoints. We don't need the First Amendment to protect greeting card prose. We need it to protect the openness and diversity of a free society.

The timing for this congressional nonsense couldn't be worse. The U.S. has a vital role to play in the new on-line environment as defender of free speech and open debate. Many countries will be tempted to impose restrictions because of culture, for economic security, for national security or simply to intimidate opponents. Political leaders in the U.S. should stand up against the thought police, not join their ranks.

We all have an interest in opposing censorship. No matter what your views, they may be illegal somewhere. If each country imposes a filter on information, there may be little content left.

Vance Packard wrote in The Naked Society, "the Bill of Rights represents a magnificent vision for assuring the Blessings of Liberty." Those are important words. Kids should have a chance to read them before the high-tech moralists sweep the books off the shelves of cyberspace.

SURF'S UP
IN THE PAGES OF COMPUTERWORLD

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COMPUTERWORLD
Everything you need to know

By *Joseph Maglitta*

IS schools:
Need improvement

Critics worry that the gap between what industry demands and what undergraduate programs supply is widening. But your company can still snag top talent.

You'll pay up to $50,000 for freshly graduated information systems hotshots this spring. For that kind of money, you expect something approaching plug-and-play performance, right?

Don't count on it.

Undergraduate programs in IS and computer science are struggling to keep pace with warp-speed technological and business changes. Unfortunately, reformers and critics say many schools are lagging, widening the disconnect between buyers and suppliers of new IS talent.

"It is difficult to find young people who are ready and equipped to come in ... even at an entry level," says Rich Malone, a partner responsible for IS at Edward D. Jones & Co., the fast-growing, St. Louis-based retail brokerage.

IS managers and recruiters say the disconnect has driven up training budgets, forced many companies to stop hiring new graduates, fueled outsourcing (an estimated 40% to 50% of new graduates go to outsourcers and consultancies) and cost untold amounts in dollars and lost productivity as a result of mistakes by poorly trained IS workers.

How bad is the problem? To date, there have been no national studies of the issue. But an exclusive *Computerworld* survey of 90 representative four-year programs found that only a handful exposed the estimated 40,000 students to most of the technical skills desired by industry. Interviews with nearly 50 academicians and IS managers found strong concern in both groups.

What's the problem?

Many say new graduates often lack the right mix of technical, business, industry and soft skills in demand in today's decentralized, user-driven environment. Some complain that few graduates are trained in hot technologies — such as telecommunications and relational databases — or even exposed to them. Even fewer are taught project management, communication, documentation and team skills. Fewer still learn about specific industries or new areas such as electronic commerce and business process re-engineering.

"Many [schools] still only have a single course in client/server," notes Robert Monasterio, director of human resources at the IS division of Xerox Corp. in Rochester, N.Y. "They need to learn that the view is now, if not yesterday, to move to client/server."

Others are more blunt. "Schools are three years behind business," declares Robert A. Zawacki, a consultant and longtime management professor at the University of Colorado.

"They're clinging to the illusion [that] they're driving things. They've got their heads in the sand," he said.

Gripes about graduates are, of course, perennial. Even the most demanding IS heads acknowledge that it is probably impossible to equip every student with every needed skill. But lately, the discussion has become more urgent — especially in academia.

A recent article in a special *MIS Quarterly* issue on the topic concluded that "Current IS curricula in many universities are not well aligned with business needs." Among other things, authors Dennis M. Lee of Suffolk University, Eileen M. Trauth of Northeastern University and Douglas Farwell of CSC Consulting noted that many undergraduate programs emphasize areas such as decision-support systems and expert systems that are considered by many IS shops to be low priorities.

But it's not just an academic question. The powerful Society for Information Management recently began an ambitious global campaign to close the gap between business and IS educators and students (see page 83).

Moreover, the Association for Computing Machinery (ACM), the Data Processing Management Association (DPMA) and the Association for Information Systems have formed a nationwide task force that is creating the industry's first jointly developed model curriculum, called IS95 (see page 83).

The problem's severity varies from region to region. "And I can't remember a time when industry didn't say that today's grads are poorly trained," says John Slimick, a 15-year programming veteran who now teaches at the University of Pittsburgh at Bradford. But for many schools, the voice of the market still sounds more like a stranger than a partner.

Reasons for the disconnect between academia and business are complex. Most boil down to how universities are run — and money. Among those reasons are the following:

Too much change, too few dollars. "Ideally, we need to turn platforms around every two or three years," says Robert Zmud, chairman of the information and management sciences department at Florida State University in Tallahassee. "That's a real problem." Sound familiar? Probably, but what's tough for your corporation is usually impossible for colleges and universities.

"Our students have better resources than our campus has," says Kevin Elder, an associate professor at Kennesaw State College. The Marietta, Ga.-based school has done extensive curriculum updating. Still, Elder acknowledges, "Our computing resources are pitifully behind industry's."

Academics say Microsoft Corp. and other tightfisted software firms are getting better about making donations and deals. Still, most college classrooms and computer labs are more "needing edge" than "leading edge."

It's a seller's market. By some estimates, IS enrollments have plunged as much as 50% over the past decade — a hot problem in itself. "We could place three times as many students as we do," says Bob Hartoe, coordinator of an award-winning program at the University of Wisconsin-Whitewater. Some schools report up to seven job offers per student.

With demand so strong, many shops are happy to get a warm body.

Thin programs. Even though schools can't crank out IS graduates fast enough, some contend the market is overcrowded with schools.

"Things are stretched too thin," says J. Daniel Couger, a veteran University of Colorado professor who's helping to spearhead IS95 reform. He notes that many major cities have four or five IS programs. "Not only one has really got the proper resources and hardware and software and faculty," he says.

His solution? "A third of the programs out there ought to be wiped out," Couger says. "They are doing a tremendous injustice to students and companies." He cites research that shows more than half of IS

Hot skills: Few thrills

How good a job are undergraduate programs doing teaching students in-demand IS skills? Computerworld mapped 90 representative IS and computer science programs against the skills U.S. companies say they need. Result: a classic bell curve.

Number of schools (vertical axis); Number of top skills taught (horizontal axis): 9-10, 7-8, 5-6, 3-4, 1-0

The skills surveyed:
C, C++, Visual Basic, OS/2, DOS, Windows, Windows NT, TCP/IP, Novell, Oracle, network management

Among our findings:
- Nearly one-third don't evaluate students on their knowledge of C++.
- Nearly half (48%) don't evaluate on TCP/IP skills.
- Only 28 evaluate network management skills.
- Only 27% evaluate students in project management.

Most top skills offered:
- University of Michigan
- North Dakota State
- East Tennessee State
- Texas A&M
- University of North Florida
- Ball State University

Fewest top skills offered:
- Kansas State University
- University of Illinois at Urbana
- University of Calif. at Berkeley
- Oregon State University
- San Diego State University

Source: *Computerworld* survey of 90 U.S. colleges and universities

IS schools: Need improvement

programs offer only four or five courses. "Somebody entering the New York City market with five courses in IS is not going to satisfy many of the companies there," he says.

Many academics say guidelines from the American Assembly of Collegiate Schools of Business make it tough for students to take more than 36 of 120 credits in IS.

Poorly trained faculty

Few college instructors have mastered — or even seen — many new tools and technologies. "I've been here 13 years and, recently, for the first time ever, I was sent out for training in Visual Basic," says one assistant professor at a respected Midwest university.

Besides money, time is precious too, says John Hoxmeier, an assistant professor at Colorado State University and former chief information officer at Fuller Brush Co. "Keeping up with technological advances is a full-time job," he says.

What about hiring experienced talent to teach? Forget it, says Jim Leonard, who teaches IS at Columbus College in Columbus, Ga. "I have yet to interview a faculty candidate that has development experience in something as common as Microsoft Windows using C++ with either Microsoft or Borland compilers," he says. And anyone who knows client/server, object technology and graphical user interfaces (GUI), he adds, "is not even interested in taking the salary any college is willing to pay."

Making matters worse is a system that rewards publishing more than hands-on experience. Explains John Werth, chairman of ACM's academic board and assistant dean for information technology at the University of Texas in Austin. "Faculty members must make a choice between summer consulting in industry, honing the skills to keep them up to date or research at a more abstract level. Often the person will make the second choice."

Politics and philosophy

Some fear the age of technology has outrun the slow-moving, collegian ways of academia. As Zawacki, author of a recent book titled *Transforming the Mature IT Organization*, puts it: "Universities want a curriculum focused as progress about the pace of a turtle with a case of the gout."

Teachers complain that many other departments don't understand or respect technology. At many schools, IS, computer science, business, engineering and even mathematics programs vie for limited computing resources, courses and students. It all means that getting university approval for a new course can be a nightmare. "Universities are run by socialists," one professor complains.

More fundamentally, many educators say it's a college's job to teach key concepts for lifelong learning, not hot skills. "I don't give a hoot about Visual Basic: it'll soon be replaced by something else," Northeastern's Trauth says. "It would be dishonest for us to simply teach [students] current hot topics without enabling them for the challenges they will face."

What you can do

[caption illegible]

Sports scouts know that fresh young talent doesn't fall into your lap. Try these tactics for visiting tomorrow's stars:

Start bird-dogging

Take a lesson from FedEx Corp. and Edward D. Jones. These and other companies identify up to 30 or 40 regional and national schools from which to recruit talent. Then they assign IS managers to make regular visits.

The FedEx "Ambassador" program assigns 29 high-level IS officers — including managing directors and vice presidents — to serve as liaisons at 30 colleges and universities, says Rick Nordtvedt, FedEx senior manager of development services. The idea is to help steer programs, snap promising interns and build a long-term, reliable feeder system.

Each of these IS "ambassadors" visits a couple of times a year with faculty and administrative staff. Some sit on steering committees. Some give presentations and guest lectures. At the University of Memphis, FedEx staffers work with students and professors from IS, marketing and logistics at the school's Center for Cycle Time Research.

Nordtvedt declines to say where else FedEx recruits, other than the University of Texas and the University of Pittsburgh. "Competitive advantage," he explains. "Skill sets are in short supply and strong demand," Nordtvedt says. "You find as many sources as you can."

Deloitte & Touche certainly does. The Big Six consultancy recruits at 45 schools, says Thomas Walker, a managing director in Atlanta. You probably don't need to hire 100 new IS staffers as they do. But the more you swing, the more you hit.

The program at Edward D. Jones is similar, but

smaller and less formal. Begun four years ago, it has expanded from five to a dozen schools, including Indiana State, Illinois State and Purdue universities. IS workers and executives take part.

"We sometimes have an intern or two come work us and give a real-life testimonial: 'Here's what I did, here's what I liked.' They have far more credibility with the students," Malone says.

Even if you don't get that formal, it's worth having you or a staffer volunteer as a guest lecturer at local schools. Most colleges say they'd love it.

Look beyond IS programs

It sounds like heresy, but your brightest new IS hires may be finance, accounting or marketing majors.

Or you might take a look at students trained in your industry. That's the new strategy at Sears, Roebuck and Co.

Last summer the $53 billion retailer shifted its philosophy about whom to hire as interns for its 1,200-member IS department. Instead of recruiting IS majors, Sears now wants retailing majors, says Joe Smialowski, senior vice president and chief information officer. "IS associates within Sears need to view themselves much more as retailers as opposed to being in the systems business," he explains. Last year, Sears hired 115 new IS workers, 40 right out of college.

This year's pilot was modest: one student from Santa Clara University. But Smialowski says Sears plans to expand quickly.

No specialists to do heavy IS biting may not make as much sense at your company like they based another big plus besides perspective: they're devalued.

IS schools:
Need improvement

Florida State and other schools report a boom in double majors, such as finance and IS.

Become an adviser. Colorado State boasts US West, Inc., Texaco Exploration, Andersen Consulting, Safeco Insurance Company of America, Sandia National Labs, Hewlett-Packard Co. and other big names on its advisory council. You can bet there are few gaps in what they consider important. Many schools that have not yet formed such boards say they are eager to do so and welcome volunteers.

Get pickier in your hiring. "What?" you ask. "It's already tough enough just trying to find people." True, but a little extra attention at the interview table can save you big bucks at the training table. And big headaches.

Many college professors express amazement at how uncritical employers are when screening new recruits. "You can certainly tell by the resume they had courses, but not if it was watered down," Nolan says. Ask lots of questions about courses and their curriculum, he recommends. Visit the computing labs of schools from which you hire.

And make sure to systematically — and deeply — probe for soft skills, advises Tom Wilczak, a senior systems manager and 23-year veteran who heads Sears' IS hiring and training programs.

By formally screening in six nontechnical areas — including communication, problem solving, willingness to grow and learn and self-motivation — Sears has reduced its new-hire dropout rate from 15% to 20% to less than 5%, Wilczak says.

Give away some money. Nobody says you have to fund a department chair. But even a modest donation of equipment or cash to worthy colleges and universities certainly can't hurt your chances at getting first whack at recruiting time.

Start hunting on-line. "The whole concept of college recruiting is going away," says Jeff Brody, vice president of human resources at PRC Inc. The McLean, Va. systems integrator has 7,000 workers and still hires 1,000 new IS graduates per year. Start checking on-line resumes and program pages now.

Broaden your vision. If you haven't done so, take a look at candidates from two-year colleges and "career" schools. Their graduates often know more about the hottest tools and languages than their pricier four-year counterparts. And accept the inevitability of lifelong, just-in-time training updating.

Consider creating a "corporate university." On-site company colleges are shaping up as the hottest education forum for the latter part of the 1990s. The number of "corporate universities swelled from around 400 five years ago to nearly 1,000 today," says Jeanne Meister, president of Quality Dynamics, Inc., a New York consultancy. Increasing amounts of technical and IS courses are delivered this way.

What's

Professional and academic groups are struggling to help the corridors of business and academia converge.

SIM reforms. A new IS education working group is trying to unite IS practitioners and educators on its WorldNet, a World Wide Web-based forum launched in late 1994 (www.world.org/isworld.html).

Among other things, the on-line forum will let IS practitioners give feedback on proposed IS courses, let IS professionals serve as adjunct faculty and mentors and will feature job placement and tracking systems.

"Over time, MIS education will become more responsive and move closer to the actual needs of the business community," says Bill Kettinger, professor at the University of South Carolina.

SIM is now enlisting member, corporate and financial support for the effort. Kettinger says Jeff Clanton, vice president of information services for Citizens Gas in Indianapolis, is co-leader.

Revamped curriculum. A nationwide task force is hurrying to finalize a major curriculum update that it says addresses many current crises.

The so-called IS95 program addresses minimum standards for computer and IS training for general business students as well as for IS minors and majors in the U.S. and Canada. It is the first nationwide revamp of IS undergraduate programs since 1981 and the first joint effort by professional societies.

The 105-page draft establishes guidelines for training in 10 major areas: communication, application

systems, technology and tools, interpersonal relationships, management, problem solving, systems development and methodologies, systems theory and concepts and professionalism and ethics. Couger says IS95 makes distinctions between computer science and IS and tries to give the latter "more human relations skills without sacrificing technical capability."

Drafters expect to publish the model curriculum by as early as June.

Some acknowledge the effort's importance but question its impact. Curriculum reforms "tend to be out of date by the time they are published," Zmud says.

Many schools aren't waiting to revamp their offerings. They have already set in place new courses of study to reflect corporate realities. They say IS majors need skills that reflect GUIs, object-oriented programming, software engineering and client/server technology. Among them are Columbus (www.cs.cmu.edu/iw), Colorado State and Purdue (www.eagr.iupui.edu/cpt/ba.html). Syracuse University and others have created new "information science" programs, which some predict will be a growing source of talent.

Heavy hiring by consultants. Increasingly, consultancies are the only ones able to shoulder expensive training costs often required by recent graduates.

"We're not averse to hiring new talent," says Chris Tenza, programming manager at Betz Laboratories, Inc., a $708 million specialty chemicals maker in Trevose, Pa. "It just takes time to groom them up to speed."

Magita is Computerworld's senior editor, re-engineering/corporate strategies.

SIM hopes to bring IS managers and educators together on ISWorld.Net

Columbus College is among schools whose new curricula include objects and client/server technology

Where the jobs are

1996 will be a banner year for information systems hiring. But the hottest job prospects vary by skills, industry and region.

T he best place to go for a job in information systems this year is, well, just about anywhere.

It promises to be a banner year for careers in the IS industry, with hiring, starting salaries and benefits all expected to rise dramatically. The majority of companies recently surveyed by *Computerworld* plan to increase their staffing this year in all regions, in all industries and at every job level.

Some markets are better than others. Here's a sampling of what to expect for the jobs and skills most in demand in particular cities and states.

New York

MAKING IT BIG IN THE APPLE

New York, New York, is a helluva town. But don't show up in sneakers, and make sure you're toting a model resume if you expect the Big Apple to roll out its welcome mat.

Recruiters and IS managers agree that New York and nearby areas such as northern New Jersey are fast becoming an employee's market. Many skill sets are increasingly hard for employers to find, and salaries are beginning to rise, sometimes dramatically.

But be forewarned: Metro New Yorkers generally expect IS professionals to look and act the part and to be prepared to speak the language of business as well as technology.

"There is a hiring climate we haven't seen here for at least five years," says Source Services Corp.'s Vincent Rios. The former managing director for the New York metropolitan area at the national recruiting company, Rios is currently in charge of the tristate area of New York, New Jersey and Connecticut. "We are seeing great demand for people who can use development tools — GUI, Visual Basic and client/server database technology — to quickly develop solutions," he says.

Rios says the current market demands have helped a few IS professionals win giant salaries in New York — at least one he is aware of is making a whopping $250,000 per year.

"Although some of this comes from multimedia or other parts of the economy, I think most of it is the financial services companies," Rios says.

That other end of the IS spectrum — far from the buttoned-down world of financial services — is a cross-fertilization of technical skills and the creative arts channeled into the mediums of CD-ROM and the Internet. According to the New York New Media Association, there are already at least 100 such companies in the city employing some 10,000 people.

"The high-tech industry, particularly the multimedia sector, is without a doubt one of the hottest growth fields in New York City. It has already become an important job producer for the city's economy and will

likely continue to spawn even more jobs in the coming months and years," says John S. Dyson, New York City's deputy mayor for finance and economic development. — *Alan Earls*

Florida

EXTENDING A WARM WELCOME

Florida is extending a very warm welcome to IS professionals this winter. IS managers and recruiters across the state are aggressively seeking client/server and Cobol development specialists.

And statewide employment projections through 2005 are downright sunny: The state Labor Department estimates Florida employers will average more than 1,000 openings a year for systems analysts alone.

Though tourism remains Florida's dominant industry, the state's Top 50 employers include health care, entertainment, banking/financial services, IS contracting services, transportation, retailing, utilities and insurance firms. And the demand for IS professionals exceeds the talent available.

"This area went through gut-wrenching changes over the last few years," says Thomas Loane, vice president of information services at Alamo Rent A Car, Inc. in Fort Lauderdale. "A number of banks disappeared as well as a couple of major companies, like PanAm, and a lot of companies moved their data centers out of the area. So a lot of people left the area because the opportunities had dried up. Now the growth is back, and the people aren't here."

Jacksonville in northeast Florida, Tampa/St. Petersburg on the west coast and Orlando in central Florida also offer IS professionals a number of opportunities. Along with Miami, these cities have some of the lowest unemployment rates in the state.

Don't expect a relocation to Florida to be a day at the beach, however, say IS managers who frequently recruit from outside the state.

"There's a lot of good things about Florida, but you have to come here for the job opportunity, not the environment," Loane says. "You won't be on the beach ev-

ery day. You won't be getting a tan at the office. It won't be like vacation when you have maid service and eat at restaurants every night. You'll have to work and buy the groceries and pay the bills. Reality isn't a vacation." — *Leslie Goff*

Southwest

PHOENIX RISING

The Southwest is known for its hot climate and hot food, but just how hot the IS opportunities are depends on where you look.

Despite the rapid growth in the Las Vegas area — the fastest in the nation, according to the U.S. Census Bureau — IS opportunities are limited. This is casino and hotel country, where IS efforts historically aren't very cutting-edge.

Phoenix is rising, however, and promises the best bet for IS professionals seeking Southwestern flavor in their work. Phoenix is shifting its economic base from tourism to manufacturing, and plenty of new jobs are being created in the process.

Tucson, Ariz., which combined with Phoenix accounts for 80% of the state's total employment, is likewise enjoying a hiring surge. The area is attracting new software, manufacturing and customer service operations, offsetting the downsized defense and aerospace industries.

The Albuquerque, N.M., market also holds promise, especially for systems analysts, according to the state's Department of Labor. High-tech manufacturers, such as Intel Corp., Motorola, Inc. and Phillips Semiconductor, are increasing their presence in the area. — *Leslie Goff*

Washington

CAPITAL CAREER CHOICES

The Washington job market has rebounded in the past 12 to 18 months from the economic slump that marked the early 1990s. IS professionals certainly haven't been left out of the local boom. Opportunities abound for both permanent and contract positions in the commercial and government sectors.

It's an employee's market in the District of Columbia area for many client/server skills. Even the mainframe market is strong, as the supply of trained talent falls short of the positions available.

"This is the hottest I have ever seen the market," says Bart Wiseman, vice president of RHI Consulting, a contract management firm, and of Robert Half Information Systems, a recruiting firm, both based in Arlington, Va. "We have a hard time finding good people, so there is a lot of room for good candidates to come here to live."

That view is shared by Joe Collins, who is affiliated with George Washington University. As the associate

director of client services for Systems & Computer Technology Corp., the university's computer outsourcer based in Malvern, Pa. Collins oversees hiring for the 70-plus-person IS department at the university. "There is still competition out there. There is page after page of ads [in the newspapers]," Collins says. "It may take us six weeks to find somebody."

Geico Corp., an insurance company in suburban Chevy Chase, Md., has had a hard time attracting client/server experts, particularly in Unix, Visual Basic and Informix.

"We are still primarily a mainframe shop, but we are migrating many of our applications over to client/server. We have a few systems up and running now and are migrating a lot more over the next couple of years," says Carolyn Rosenberg, director of IS at Geico. Because Geico is at the early stage of its client/server migration, it has had difficulty finding programmers. Many potential candidates would prefer to work in shops that have already moved most applications off the mainframe, Rosenberg says. — **Linda Wilson**

Hawaii
LURE OF THE LAND ISN'T ENOUGH

Hawaii's need for skilled IS personnel mirrors that of most mainland states, but some employers on the islands are offering only a qualified "aloha" to candidates seeking to take advantage of its sun, sand and options.

"One of the problems we have in terms of getting qualified people [from the mainland] is that a huge number of those who respond to our ads have the beach in mind," says Greg Colbert, vice president for corporate development at Honolulu-based Title Guaranty of Hawaii, Inc. "They come out on a lark and find out it is too expensive to live the way they want, so they turn around and go back." The result: projects left in the lurch.

Colbert's complaint, echoed by several other island companies, doesn't negate the fact that there are jobs available for those willing to commit for the long haul. Some are even created on the lower end as a consequence of homegrown talent that has advanced beyond local needs.

Topping Colbert's wish list are people experienced in database design, networking and network security with an emphasis on the Internet, and application development.

For Dennis Koo, Hawaii's employment picture is a matter of "not enough jobs and not the right mix of people for the jobs that are available."

Koo, president of Pacific Area Computer Services, says, "We are basically a small-business town: 90% of the companies here nine people or less, so there are not that many large sites." He sees a need mainly for "people to maintain, manage and install networks." — **William Spain**

Southern California
DEFYING 80'S DIZZY

Driven by a surge of small, technology-oriented companies, Southern California's economy has begun to stabilize and recover from the recession of the early 1990s. Though overall economic growth is slow, IS

professionals can be more optimistic about the employment market than most.

"We have a broad-based economic rebound going on in Southern California," says Jack Kyser, chief economist at Economic Development Corporation of Los Angeles County. "The major sectors driving it are all major users of technology."

Finding the right IS professionals to fit the bill has been a struggle for Alan Alters, director of information technology/West Coast for Turner Broadcasting Worldwide Information Technology Services in Los Angeles. Alters oversees a staff of 20, which he plans to increase by 20% to 25% during the next year.

"I have openings, and I'm just not finding the types of qualified candidates I'm looking for," he says.

Contributing to that gap: a major labor migration out of the region following massive layoffs and company closings during the recession.

Today, Los Angeles County is regrouping. International trade, management consulting and professional services and new entertainment industry concerns are all on the rise in Los Angeles. And the old standbys — tourism, television and motion picture production — continue to provide the area an economic anchor.

Public sector jobs dominate in San Diego, but "If you're in San Diego and you're not in the public sector, you're probably working at a high-tech company doing software development," says Max Schetter, director of economic research for the Greater San Diego Chamber of Commerce. — **Leslie Goff**

Missouri
SHINING IN THE SHOW ME STATE

The Gateway Arch in St. Louis not only beckons millions of visitors a year, but it is also a mecca for jobs in IS statewide. Thanks to low unemployment and a diversified economy, demand for IS professionals in 1996 promises to be even stronger than it was in 1995, which was a good year by most accounts.

"There is demand across the board — everything from old IBM mainframe technology to SAP," says Rick Sievers, a staffing specialist in the St. Louis office of RHI Consulting.

Health care, financial services and manufacturing are three industries of particular hiring promise because of shifting technologies, Sievers says. But client/server or systems architecture experience will greatly expedite a job search in any industry.

Statewide, there is strong demand for client/server development tools. Familiarity with GUI products such as Microsoft's Visual Basic and Powersoft Corp.'s PowerBuilder can be a ticket to a job, according to Kim Egelhoff, marketing director at William Byrne & Associates, Inc., a consulting and software development firm in St. Louis. Applicants with experience in various relational database products, specifically Oracle, are also valued.

"Technical skills are very important. However, ideally we look for candidates with well-rounded communication skills and a strong work ethic as well," Egelhoff says. "With technology evolving so rapidly, it is desirable to have individuals who can adapt to those new technologies." — **Robert Kronemyer**

This report was prepared by freelance writers Leslie Goff of New York; Alan Earls of Franklin, Mass.; Linda Wilson of Glen Ellyn, Ill.; William Spain of Boston; and Robert Kronemyer of Elkhart, Ind.

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Marketplace

'No, no, no. It's CORBA, not cobra.'

Client/server terminology can be tricky for IS managers and their top executives

BY AMY MALLOY

Your boss just doesn't get it — client/server technology, that is. Well, can you blame him? If you go around talking there (as in two-tier or N-tier architectures), he may offer you a box of tissues. If you utter an emphatic "OLE," he may think you're re-enacting a bullfight.

To help demystify client/server technology and the terms that surround it, several experts in the field have defined some basic concepts to help you explain it to your boss.

Two tier

In a two-tier architecture, there is a client side and a server side, and the user interface and the logic are usually database-intensive, explains Mitch Kramer, consulting editor at Boston-based Patricia Seybold Group.

"Basically, there is a client and there is a server and presentation related to that on one tier. And the storage and things related to that [are] on the second tier," says Henry Morris, research manager for applications and information access at International Data Corp. in Framingham, Mass.

IDC's Henry Morris

Three tier

In a three-tier architecture, there is a client, often called a thin client, which is the presentation services of an application. The application logic makes up the second tier, says David Kelly, a senior consultant at Hurwitz Consulting Group, Inc. in Watertown, Mass. Finally, the third tier is the data services or the database.

Hurwitz Consulting Group's David Kelly

Morris: "The guts of the thing is what is going on in the application layer and the back. The third tier is just the data storage and whatever processes are needed around that."

Kramer: Instead of running everything on the PC, in a three-tier architecture, the application logic, business processing and business rules are segmented. Some functions are on the PC, and some are put on other platforms in the network.

N tier

Kelly: N-tier architecture is similar to three-tier architecture except that it's possible to have "n" represent any number of application servers. Therefore, the application may be split up among many machines. This alternative would be chosen for its performance, to handle a large number of users or because of application complexity.

DCE

Morris: Distributed Computing Environment (DCE) is a group of services defined by the Open Software Foundation.

Kelly: This set of services is used to create distributed applications, and applications aren't limited to proprietary or vendor-specific technology.

Kramer: One of the components of DCE is remote procedure calls (RPC); the others are security, time and directory.

RPC

Morris: An RPC is where one application calls another application and gets a response.

Kelly: RPC is a part of DCE, and it's similar to a standard function call. However, with RPC, the function takes place on another machine.

Kramer: "If you spell it out, it makes a lot more sense than the acronym: remote procedure call. Everyone knows what a procedure call is; I'm just going to do it remotely instead of locally."

CORBA

Kramer: Common Object Request Broker Architecture (CORBA) is middleware that performs program-to-program communications among object-oriented programs, which must be written in C or C++.

Kelly: CORBA is a method that provides communication between objects in a distributed multiplatform environment.

OLE

Kelly: OLE lets you incorporate Object Linking and Embedding technologies into applications. "For example, many common Windows packages, such as Microsoft Word and Excel, have OLE support, which allows you to embed an Excel spreadsheet in a Word document."

Kramer: "You can do Visual Basic programming, Delphi programming or PowerBuilder programming and make this OLE stuff work across the network."

Kramer: OLE is similar to CORBA, but it's possible to use higher-level languages with OLE, which leads to greater productivity.

Kelly: RPC is the basis for Network OLE.

Message-passing middleware

Kramer: This architecture, analogous to electronic-mail systems, eliminates the need to wait for a procedure to be completed. "Message passing works for applications. They have their own mailboxes, so to speak, and every once in a while they look into them and see if there is any work to do."

PLACE

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AT&T

Sharing the wealth

Notes developers offer investment opportunities

By Tim Ouellette

The technical beauty of groupware is that it enables the sharing of information. But investors looking to share in groupware's profits will find limited opportunities.

Since IBM acquired Lotus Development Corp. for almost $3.5 billion last June, investors have been deprived of a pure groupware play. To date, there are few publicly traded pure groupware companies.

However, Notes has allowed some 12,000 third-party developers to share the wealth. As Lotus Business Partners, these developers receive valuable groupware training and software in return for helping to prove the market for Notes.

"Much of the accumulated Lotus experience and wisdom is contained in these independent companies that specialize in assisting Lotus customers," says Bart Wong, an analyst at Dataquest, Inc. in San Jose, Calif. So investing in these firms may be the best way to get a share of groupware's bounty. Still, almost all remain small, privately held companies.

Going public

One developer that has gone public is CBT Group PLC (see chart). CBT has an exclusive agreement to work with Lotus to develop computer-based training software for Notes. This blessing from Lotus helped CBT launch a successful initial public offering (IPO) last April and has helped it secure deals with other major software makers, including Microsoft Corp. and Oracle Corp. The deals have helped the stock price, which has more than tripled in less than a year.

Although only a few Notes developers have gone public, several are looking to expand their horizons by applying for funding from venture capitalists or private investors. Such

CBT Group PLC

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- Ticker Symbol: CBTSY (NASDAQ)
- IPO date: April 13, 1995
- IPO price: $16
- Stock price (Feb. 23): $57.75
- 1994 revenue: $21.4M
- 1994 profit: $1.6M
- 1995 revenue: $36.9M
- 1995 profit: $6M

activity usually leads to either an IPO or a merger, according to Kirk Walden, marketing director for Price Waterhouse's High Technology Group in Dallas.

In fact, groupware is receiving more attention from venture capital firms. Groupware technology was a factor in at least three quarters of all the software-related deals in the fourth quarter of 1995, although they were not labeled as such, says Larry

Buchsbaum, manager at Cooper & Lybrand's National High Technology Group in Boston.

Workgroup Technologies, Inc. in Hampton, N.H., estimates that every dollar's worth of Notes software sold generates another $7 to $10 in service revenues. Such a statistic makes it tempting to focus on services when evaluating developers.

But Tom Crotty, general partner with Battery Ventures in Boston thinks companies that rely solely on service revenues are too vulnerable. "To create long-term value for investments, a company really has to be playing it from the product side," he says.

Analysts and Notes developers also advise against offering only one product because it could easily be subsumed in a Notes upgrade.

Brainstorm Technologies, Inc. in Cambridge, Mass., provides Notes-related products and services. The company started two years ago with one product and two employees. It now has 45 employees and supplies four popular Notes administration tools.

Analysts estimate that 20% of all Notes installations run at least one of Brainstorm's products. The company counted venture capital firms but chose a private investor to help it fund new products. Company officials have said they expect to issue an IPO sometime in 1997.

Another private company, Revelation Software in Stamford, Conn., is trying to capitalize on its purchase last year of Lotus' Vip development software. The deal suggested that Lotus trusted the company to provide better support and improvements to the product than it could do on its own. Revelation, which has 90 employees — including several former Lotus engineers — recently came out with an upgrade to Vip.

The firm received venture capital funding in 1992 and last year, but Chief Executive Officer James Apostolares says the firm is still a year away from deciding whether to go public.

High tech lags in direct investment

Few high-tech companies offer direct-investment programs, but it's just a matter of time, says James J. Volpe, a vice president at First Chicago Trust Co., the nation's largest stock transfer agent.

"We are witnessing the initial stages of a significant new way for individual investors to purchase, hold, reinvest and sell shares of common stock directly," he says.

About 86 companies now offer these programs, whereby investors are able to purchase stock directly, without having to pay broker fees.

Most of the companies are in the energy and utility sectors, although there are a few technology-related enterprises involved, such as AirTouch Communications, Inc. and Comsat Corp. Volpe expects the number to mushroom to 400 to 500 by the end of the year.

"As soon as a Compaq or an IBM starts doing it, then we'll see it catch on in high technology," Volpe says. He notes that both companies are considering direct-investment programs. Volpe has led an effort by the Securities Transfer Association, Inc., which represents commercial stock transfer agents, to make it easier for consumers to set up the programs.

DRIP investment programs may charge a small fee, "but they are a fraction of what you'd pay a broker or dealer," he says.

For more information and a list of companies that offer direct-investment programs, call (800) 225-6585. The call costs $2.50.

— Tom Harket

Number of companies offering direct investment

Source: Securities Transfer Association, Inc., Inc., Hurst, N.J.

*Projected

Stock Ticker Feb. 16, 1996

PC firms seek corporate sales

In the competitive PC market, the fate of a company may hinge on the swing of a few points of profit margin.

"In this sector, gross profit margins of 20% to 22% mean prosperity. If they fall to 15% to 18%, like Apple's, it spells disaster," says Michael Geran, an analyst at Donaldson, Lufkin & Jenrette Securities Corp. in Jersey City, N.J.
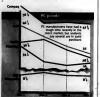
And margins are more difficult to maintain if the company sells exclusively into the consumer market. Digital Equipment Corp. recently recognized this fact when it announced it would bow out of the consumer sector.

"The consumer side of the PC market has reached a saturation point," says Chris Garland, an analyst at The Chicago Corp. in New York. But two stalwarts of the consumer market — **Gateway 2000, Inc. (GATE)** and **Dell Computer Corp. (DELL)** — are maintaining strong positions this year by focusing on second-tier buyers and consumers who are looking to upgrade, Garland says.

Robert Anastasi, an analyst at Hampshire Securities in Atlanta, agrees and denotes Dell and **Compaq Computer Corp. (CPQ)** as "share gainers" (see chart).

But companies that are looking for higher profits in the current market should look to the corporate segment, which analysts predict will expand this year as more corporate users upgrade to 32-bit operating systems. — *Stewart Deck*

PC parody

PC manufacturers have had a tough time recently in the stock market, but analysts say several are in solid positions

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High tech drives automaker

CONTINUED FROM PAGE 1

co-designer. Modus is a new retail process and a set of proprietary, object-oriented software applications. Chrysler officials believe the design to disclose the exact price tag.

"Let's just say it was a multimillion-dollar investment but with billions of dollars at stake," said Brian Turford, Modus project manager and vice president of systems integration at Analytical Technologies, Inc. in Bingham Farms, Mich. Analytical Technologies developed the system's software.

Modus will provide Chrysler with a gold mine of real-time data about buyers' preferences.

Every poke on a Modus touch screen is captured by intelligent software agents. Chrysler can use this information to set production schedules and inventory levels.

The pilot was set up in a single Dallas-based test site last month and will continue throughout the year. Three other pilot sites are

OLD CAR LINGO	NEW CAR LINGO
Salesman	"Transportation advisor"
The lot	"Outdoor display center"
Dealership	"Transportation center"

scheduled to go on-line soon.

After that, Turford said the plan calls for Chrysler to deliver Modus to dealers as "a kit of parts" that includes everything from brochures and signage to system hardware and software. Dealers will choose what they want and share implementation costs with Chrysler.

The average cost to set up a kiosk is about $500, Turford said.

It's worth it

"If you can gauge retail demand in real time, that's worth millions and millions of dollars every year," said Doug Cheesman, chairman at Retail Planning Associates LP in Columbus, Ohio.

Chrysler is test-driving Modus at MidPark Jeep-Eagle, Inc., a dealership in Dallas. Since January. MidPark has sold several dozen vehicles through the Modus system, including the Jeep Wrangler Rio Grande that Fred Morris bought for $14,900.

Morris, a Boy Scout camp ranger from Colorado City, Texas, traveled 284 miles to MidPark, where he said he paid $500 less than he would have paid at one of several dealerships closer to home.

"There wasn't any haggling. They didn't try to pressure me at all," Morris said. "When I get ready to replace my Chevy Caprice, we'll go back there. I already told my wife that's what we're going to do."

Modus has cut costs for MidPark co-owner Jim DeWolfe, who no longer pays commissions to salespeople. Modus' fixed pricing let him switch to a less costly salary and bonus compensation scheme.

Branching out

DeWolfe also plans to extend beyond the showroom by installing Modus kiosks in nearby shopping malls and office buildings.

Besides inventory and pricing information, the kiosks will print a bar-coded label on a sheet that contains directions and a map to MidPark. At MidPark, the customer can insert the bar-coded printout into one of the dealership's kiosks and get the exact location of the car he wants to see.

The real beauty of the bar

Behind the touch screen

"M ay I help you?" These may be the four most dreaded words spoken in a new-car showroom.

That's why Chrysler's Modus system lets customers steer themselves through the buying process.

To get started, shoppers use touch screens at kiosks — which are actually Intel-based PCs that run Windows 95 — to indicate the features they want, view video clips of different models, scan available inventory, look up fixed prices and calculate finance options.

Behind the scenes, inventory, pricing and manufacturer's information is stored on a Microsoft Corp. SQL Server database that runs on a Windows NT server.

A separate NT server handles communications and houses intelligent agent software that continually monitors the kinds of information customers request at the kiosks.

All of Modus' object-oriented applications were built with Borland Internation-

codes "is that the customer is the carrier pigeon, so we don't need an elaborate data-transfer network," Turford said.

al, Inc.'s Delphi tools.

The applications were developed by Analytical Technologies, Inc., a systems integrator in Bingham Farms, Mich.

Once a buyer selects a car, financing can be secured on-line in less than five minutes from Chrysler Finance Corp. and NationsBank, which are both linked into Modus at the MidPark Jeep-Eagle dealership in Dallas.

Other banks will join them, trying to lure customers via the Modus system's open messaging architecture.

After buying, customers are issued smart cards similar to automated teller machine banking cards.

Beginning in March, these cards will give access to Modus' service center in MidPark's service center, where customers can view on-line the services available and charges.

There is even capacity room and pop corn for the thirsty and hungry, telephones and modem ports for mobile workers — and a play area for the children.

— Julia King

The Bank of Montreal happy bank team approach will keep customers loyal. See page 63.

Oracle

CONTINUED FROM PAGE 1

access to each copy of SQL Server.

IBM doesn't have a separate Internet-access pricing scheme, but a spokeswoman said it is uncertain whether one is forthcoming.

Informix Software, Inc. hasn't announced any Internet pricing plans but is preparing them.

Different methods

Most relational database management systems vendors charge based on the number of concurrent users at a site.

Some charge based on the number of named users. Now, an Internet-oriented alternative: vendors are starting to impose flat fees instead.

The vendors say flat-fee pricing

is more fair to them and users.

When a site opens its database to outsiders via the Internet, the number of users per minute (or

is more difficult to figure and may make it prohibitively expensive.

But the new licensing schemes also plug a hole exploited by technically adroit sites that essentially let an unlimited number of users access a database while the sites pay for only a single user, said Hugo Toledo, a consultant at SSC, a systems management consultancy in Chicago.

Hit where it hurts

The Tribune Co. in Chicago is considering making the real estate, employment and automotive classified ads in its three newspapers available to Internet users.

"We have a significant budget, but if we paid by the hit, we could easily bankrupt ourselves," said Gary Wang, a systems consultant.

Len Brush, assistant vice president at Carnegie Mellon University in Pittsburgh, estimated that CA's new licensing scheme would add 2.5% to the total cost of a proj-

Table: Data on-line

Roughly how much will it cost sites to make relational data available on the Internet?		
Vendor	**Price**	
Computer Associates International, Islandia, N.Y.	$13,000 to $103,900	
IBM, Armonk, N.Y.	$1,499 for five users (OS/2 and Windows NT) $3,199 for five users (Unix)	
Informix Software, Menlo Park, Calif.	$1,500 per user	
Microsoft, Redmond, Wash.	$2,995 for Internet Connector per copy of SQL	
Oracle, Redwood Shores, Calif.	$5,900 per processor for Workgroup Edition, $64,840 per processor for Enterprise Edition	
Sybase, Emeryville, Calif.	$3,000 per PC, $8,500 per Unix engine	

Prices reflect only estimated DBMS licensing fees, not supplementary software such as Web servers (except in the case of Microsoft, which requires a supplementary product) and related fees. The products mentioned here may require additional modules for Internet deployment (proper pricing is complex and subject to negotiation), so figures should be taken only as approximate guides.

ect that the school is implementing. For an additional $15,000 or so per year, Brush said, the school can give students Internet access as CA degrees data and/or grades, courses and financial aid.

When compared with the $2.5 million that the school is spending on the total project, the additional cost is "pretty trivial," he said.

A new standard for object-oriented databases. See page 45.

Solutions to this week's crossword puzzle

(http://www.computerworld.com) FEBRUARY 19, 1996 COMPUTERWORLD

Who's Larry?

Computerword crossword by Rick Bennett

What did Larry say about CA's buying ASK/Ingres? And just who is this Larry?

ACROSS

20 Asian holiday
21 START OF QUOTE
22 System or sphere lead-in
26 Management style?
27 Deli or pizze follower
28 TI CASE tool
30 Surf's init. prod. offering
33 Legal deg.
38 IBM mainframe clone initials
35 Seasonal flowers
36 END OF QUOTE
38 Abut
40 Ventura or serve
42 Away
43 Clean one's throat
44 Pre-IBM initials

1 AT&T foe
4 Steve Young, e.g.
7 Gigantic Fed. computer customer
10 The ultimate degree
13 Lucasfilms' special effects inits.
14 Org. for building designers?
15 Hi-tech work
16 What Netscape stock price draws?
17 Syr. neighbor
18 Desert Storm intelligence source, abbr.
19 Hi-tech stock vehicle inits.

44 8108 minicomputer initials
45 Robert or Smith, movie title lead-in
47 An eerie sense
48 WHOSE LARRY IS QUOTED?
53 Jackie's ex
54 No. 1 computer service initials
55 Fed. Czar's domain
58 Advisor and book follower
60 They blew a bundle taking on IBM
68 DBMS entity, abbr
68 Every hi-tech start-up's dream, for short
80 Hi-tech bus

64 Silicon Val. state
62 Kind of curve
62 Numbering base
62 Bailout key, for short

9 Ted Koppel's prayer room?
13 Lotus metaphor
13 1950's sci-fi horror movie
15 Gonzo initials
23 Highway relocation?
23 Idiots' walking aids?
24 A certain child of Japanese immigrants
24 Intelligence/manners-challenged people
40 Tax the poor more than the rich
43 Wicker verses?
52 Syr. neighbor
32 Annoyer
37 California valley output

DOWN

1 Highway marker
2 Quick-witted swan bait of yore?
3 Proud moron's namesake?
4 Father of Thanksgiving Day parade
5 Banyan metaphor
6 Insulin producer
7 To flounder in water
8 Ribald screen epithy?

38 To approve, formally
42 Apple-famed William, and family
46 Seagoing carnivore
49 Iranian currency
50 Steady gait
52 Guitarist Russell

52 Computer interval, for short
53 Old Datapoint technology, for short

Solution on previous page.

For questions or comments, contact the author at rbennety@tcd.net

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Eleven-letter word for a puzzlemaster: Rick Bennett

By Kim S. Nash

Don't get *Computerworld's* new puzzlemaster, Rick Bennett, started about on-line censorship.

The 49-year-old Explorer Scout leader, millionaire and one-man ad shop will bend your ear like James Dean's mangled bumper.

The Telecommunications Deregulation and Reform Act, signed into law two weeks ago, flouts First Amendment free-speech guarantees like nobody's business, Bennett said.

"I'm in complete, total agreement with criticizing the Clinton administration," he said. The Internet "is the ultimate in technology; I don't believe it can be regulated. We're smarter than politicians. Technology is going to rescue mankind, not some cotton-picking politician."

As the loser of a 1978 bid for a Republican seat in Congress from the state of Washington, Bennett should know. The conservative was shot down by a guy named Don Bonker, who, incidentally, is no longer in politics either.

"But I'm sure glad I lost, or I wouldn't have met Larry Ellison," Bennett said.

Back in Oracle Corp.'s early days in the mid-1980s, Bennett helped write advertising copy side by side with the vendor's CEO. The job, which lasted from 1984 to 1990, made Bennett a millionaire.

"See, I don't get paid like the typical ad company. I get a small fee and a bunch of stock," he explained. Then bang, zoom — when the company goes public, Bennett gets rich. It has worked that way since he started backstarting nearly 20 years ago.

And that's why Bennett can afford to live in a snowy hideaway — replete with a homecourt LAN — in Sandy, Utah.

"If it weren't for the internet and FedEx, I'd have to rob liquor stores for a living," chortled the Whitman College dropout.

Either way, Bennett is a long

When he isn't biking 200 to 300 miles per week, electronic renaissance man Rick Bennett writes high-tech novels, software and advertising for software companies from his snowy, out-of-the-way home in Sandy, Utah

way from his first job at Digital Equipment Corp. in Maynard, Mass. It was 1969, a time when

"anyone with little imagination and $8,500 for a PDP could rule the world," he sighed.

These days, Bennett still works in advertising, "but only for the pure enjoyment of it." (Check out his World Wide Web site for war stories at http://www.tcd.net/~rbennett9/.)

Mostly, he likes to bike.

Every weekend, he and his wife, who has multiple sclerosis, ride tandems to a local McDonald's for breakfast. It's a 40-mile round-trip. This is on top of the 200 to 300 miles per week he rides on his own.

The great thing about biking is "you can eat like a horse and still lose weight," said Bennett, who means to lose 30 pounds lighter than he was in college.

Not a shy one, Bennett has an opinion on just about everything.

On Big Blue maneuvers: "The dumbest move I've seen is a looooong time in IBM buying Lotus. The Internet has obsoleted Notes. It takes 20 minutes for me

to log on to a Notes database to check my E-mail. It takes three seconds to get on to the Internet."

On good taste: "*Time* magazine's OK. And I track down Hunter S. Thompson's stuff on the 'net. But the only thing I read religiously is *Computerworld*."

But what about the puzzles?

It all started three years ago when Bennett wrote his first novel, a science-fiction drama titled *Air Area* that stars a character who speaks only in palindromes. Not simple, one-word palindromes such as "bob" or "mom," but full-length sentences.

Bennett wrote some software for his Macintosh to generate whole sentences that spell the same thing backward and forward and make sense.

Then he figured out that he could create crossword puzzles with the same program. Being a religious crucivertalist of both *The New York Times* variety and the one in *USA Today*, Bennett has a penchant for puzzling.

While his novel remains unpublished, his crossword puzzles will appear here every other week. It takes anywhere from a couple hours to two days to build a puzzle, which Bennett claims are of *The New York Times* quality.

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